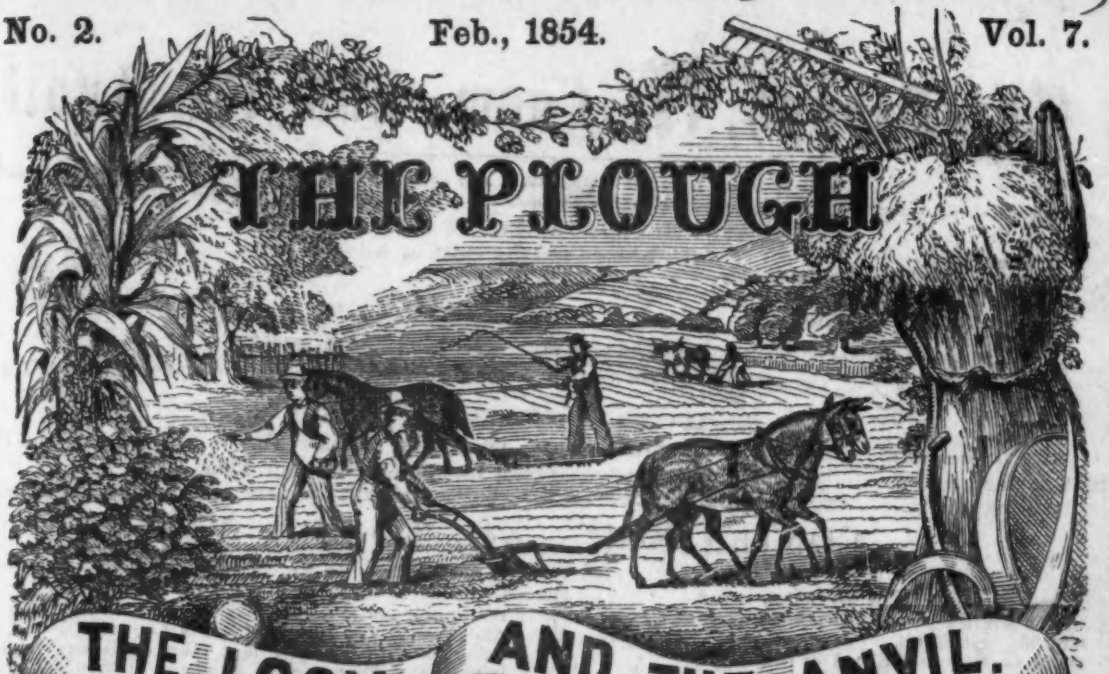
No. 2. Feb., 1854. Vol. 7.

THE PLOUGH



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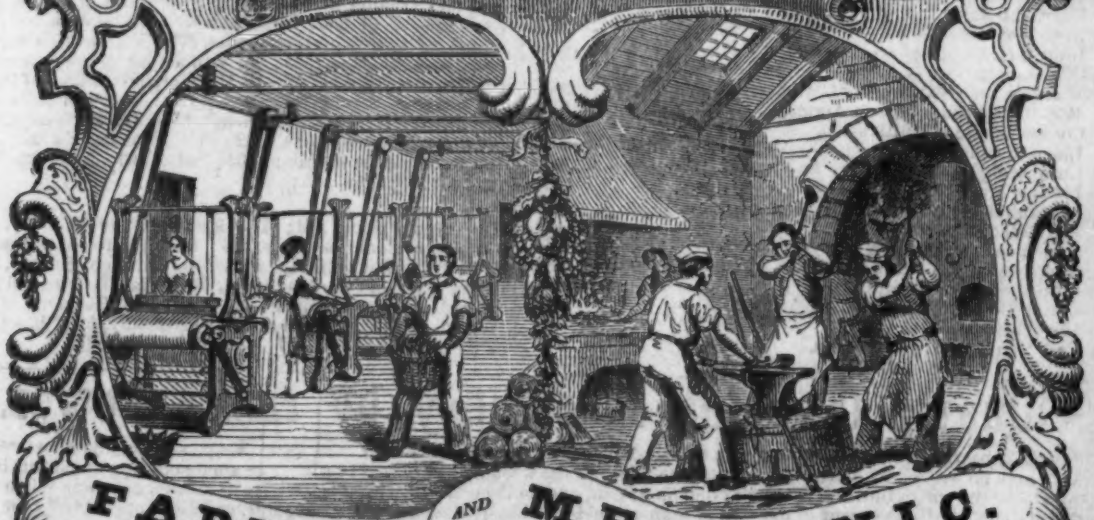

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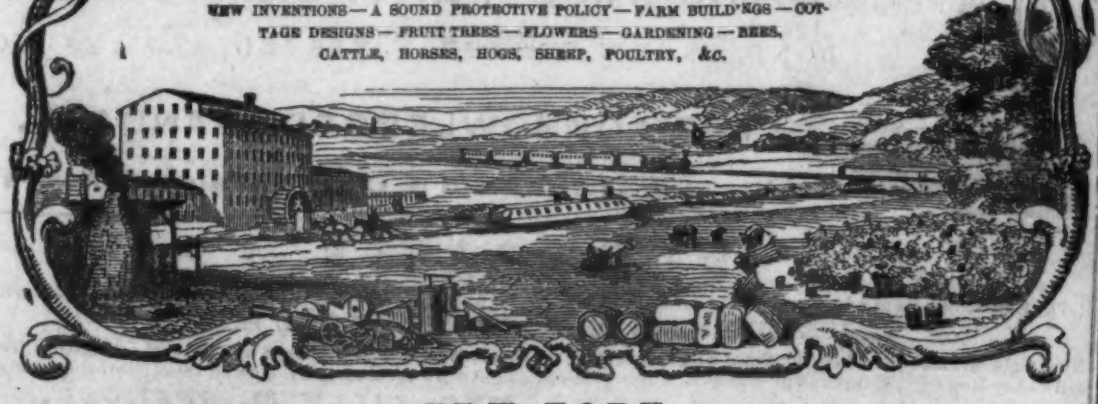

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PART II.—VOL. VI. FEBRUARY, 1854. No. 2.

PROGRESS AND POSITION OF MECHANICS.

IN the early ages of the world the mechanic arts were almost unknown. Those that existed were not, however, all of that rude form which some imagine them to have been, but exhibited proofs of wonderful skill. Whenever dress and shelter are necessary, then it is indispensable that some of the arts should be understood; and if we trace back the history of *those* products, we find that progress has been made, not in the degree of perfection to which such workmanship has arrived, but in the material used, and in the conveniences for performing the work. For example: before civilization had ever begun to dawn, in a given country, if it was a latitude of frost and snow, its inhabitants were clothed in skins. Those skins were dressed and ornamented with a degree of skill that can not even now be surpassed. Besides, this skill in workmanship was achieved almost in the entire absence of mechanical tools. The most elegant of Indian quill-work is an illustration of this. So is the incomparable work of a similar kind wrought by the Chinese and some other Eastern nations. Several of the nations that inhabit the interior of Africa are said by travellers to excel wonderfully in ornamental work in ivory, and the softer metals, as well as in those kinds so often seen among the natives of our own country.

In civilized society, these arts are indispensable. They are not merely important, but without them civilization could not exist.

To live in such an era, we must have not only a shelter from the cold, which a hovel would furnish, but we must have a comparatively handsome and convenient dwelling, into which the beams of the sun have free admittance, at our pleasure. A rude skin would protect us from the cold, but civilization requires the taste and skill of an artist to give form and beauty to our clothing. The material must also be unlike that which nature and barbarism allow to the wandering savage. It is too degrading to a progressive race to be furnished with nothing higher in any and every department than the rude savage enjoys. This necessity extends to all the conveniences, and even the essentials of life. Hence it is that the word itself, "necessaries," has its thousands of shades of meaning, according to the condition of the individual to whom it is applied. What is "a necessary" to one class of people, would be a luxury to others in a less favored condition.

Taking the view thus far presented, we might perhaps infer, that the social position of the mechanic would be higher or lower, precisely in proportion to the condition of the mechanic arts. Where the many are dependent on the few for those higher forms of art which the few alone know how to create, it is natural that they should be *looked up to*, as dispensers of especial favors. They might be regarded with the same admiring gaze with which children sometimes stare at a fancy glass-blower, or some of even higher pretensions

look upon one who performs some striking experiment in chemistry, or in some other of the physical sciences.

Accordingly, in ancient times, we find Vulcan was one of the gods, and Vaulundr, the smith, in the Scandinavian mythology, was the son of a giant and of a mermaid, and held an assigned position about the person of the king. Next to the military hero, perhaps, was the smith who provided him with armor and weapons.

Properly speaking, nature has not furnished us with any tools or implements. The knife, the axe, the plane, the plough, the harrow, the loom, the brush, nor even the card; none of these, nor any tolerable substitute for them, nor any other implement, is found as a natural production. What though we find the teazle growing in countries where the arts are unknown?—no use can be made of it. To apply it, *conveniently*, to any useful purpose, requires mechanical invention.

But if we look at society again, after time for progress has elapsed, we find a state of things in which the position of the elements which make it up is reversed. This is in consequence of another change in the mind of the community. These marvellous creations of art are no longer objects of curiosity, but the eye has been satisfied with admiring them as novelties, and men have begun to love and long for the comfort and conveniences which these inventions can procure. For, with inventions there is created the power of accumulation, and of enjoying the benefits which the ownership of property is capable of securing. True, men might be "rich" in the times of the patriarchs. But they could be rich only in flocks and herds, and their owner could not appropriate to his personal use more of the products of this property, though counted by thousands, than could he who owned only his tens, or even his units. It is only after the introduction of mechanical arts that one man could make his position essentially more comfortable, more luxurious, or more elegant than that of his neighbor; and when, by these means, the power of accumulation was so immensely multiplied, and scope was given for the exercise of talent in manufacturing, and its necessary consequence, in profitable trade, then came the diversities of condition, since extended more and more, and the luxury is the object of ambition, while the handicraft which was competent to produce it is regarded like any other manual labor.

There is, however, this distinction among the various kinds of labor, that is inherent in the very nature of things. Each kind of labor or manufacture will be held as honorable according as it requires the exercise of talent, of education, and of especial skill.

Why is not the profession of the boot-black considered an honorable calling? Simply because any fool can do such work. Why does any other trade stand higher, in its rank, than that? Because it requires more talent and skill. Why is the "boss" allowed, always, a higher place than his employées? Because the idea is innate, (if there are innate ideas,) that to obtain and maintain such a position, demands of a man a more than average amount of those qualifications. We do not say that other matters do not sometimes enter into these views, to modify, or in some way affect the degree of regard entertained for those in such positions, but we do say that this feeling can not easily be separated from them. Apparent exceptions actually confirm the correctness of this position. Have we not repeatedly heard some ambitious apprentice or disappointed "jour" speak contemptuously of those stationed over him, in such language as this: "Smith needn't feel so grand to think he is so and so; he doesn't know any more than I do," or, "it was his father's money that secured the place for him?" &c., &c.

We are very much inclined to believe that the "worship" which is so universally paid to wealth is, in part, to be attributed to this principle. It is not the abstract idea of large possessions, nor even the luxury they place within one's reach; but it is this conviction, that the possessor, he who amassed the wealth, had more efficient talent, more available power and influence; and this influence covers the less fortunate in its shadow, and shows them to be inferior. Accordingly, when some fool, some vain fop, or indolent dreamer inherits large property, he fails to receive the personal consideration freely granted to others in like condition.

There is another phase to this progressive period. Not only did new inventions and their products become articles of common trade, but *nothing uncommon* is now required in their manufacture. Though Vulcan was a god, when he forged nothing but thunderbolts, when he or his successors condescended to make horse-shoes, and nails, and hammers, &c., it was found that, with the invention of proper tools, a common mortal was quite competent to multiply these productions. Hence later Vulcans are mere blacksmiths. It was, perhaps, a mighty task for him of old to forge out the artillery of the gods; it might have been equally difficult, perhaps a much more difficult work, to forge a common hammer; but when hammers and anvils and well-arranged forges are to be had for a few paltry shillings, it ceases to become the gods to be Vulcans, and henceforth mere men, and common and ordinary men any where, may become blacksmiths.

But a machinist is something higher. The blacksmith can't make the tools and mechanical combinations required for this work; and if he could, it would require another and an advanced stage of apprenticeship to use them. Hence, socially viewed, the machinist, in the very necessity of the case, stands on higher ground than the blacksmith. The latter looks up to him. No successful machinist ever thought of becoming a blacksmith, while every day, blacksmiths aspire to become machinists. This is quite enough to show that our position is substantially correct.

Go through all the arts, and the test will apply and bring out the same result.

Nor is this all. The ratio of compensation demanded and freely given, apart from the expense of the work, material, &c., will also be found to be in the same ratio. The whitesmith demands more for a job of an hour than does the blacksmith; the machinist more than either; the maker of chronometers, &c., still more.

The mechanic arts and mechanics sustain very different positions, in different communities, whether of larger or smaller extent, as at the north and at the south, in city and in country, &c.

In different communities, too, while the *ratios* above described are perhaps never grossly violated, except in individual cases, the sums paid for the same service are very unequal.

It is curious and instructive to inquire into the relative social position of mechanics in various parts of the world. We can now only present a hint or two on this subject.

In England, the humbler and poorer sort, however skillful, are miserably rewarded for the exercise of that skill. Perhaps there is no country where the wages of such will procure so little comfort in return. That which pays dollars here, pays but shillings, or even pence, there.

The analysis of this state of things would require us to look at the organization of society in general in that country. Rank in England is based on fictitious and accidental circumstances, not on a substantial reality. The title

which descends to a worthless heir, from some ancestor of even notorious infamy, but the descendant, perhaps, of a feudal lord, is entitled to, and receives more distinction, than the most ingenious artist, or the most thorough student of science. The "nobility" are land-owners. Titles are thus associated with immense free-hold estates, while the mere artisan, whose whole estate, it may be, is only his shop and tools, and the products of his own inventive faculty, is left to acquire his own reputation. And, with few exceptions, this, under such circumstances, is synonymous with being unknown, except in one's own neighborhood, and having a reputation only co-extensive with that of the village school-master.

In other words, the distinctions which ought to belong to merit wherever found, are there monopolized by the few, and the entire mass of artisans have to toil up the hill of distinction against tremendous odds.

Low wages are almost a necessary consequence of this state of things. Moneyed capital may command a larger income, whether in one form or another; but mere handicraft, almost equally at the command of each among the masses of society, can conquer only by the greatest effort. In fact, the vast expense attending the style of the higher orders, could not perhaps endure the increased draft upon their incomes, required by a fair compensation to the masses for their labor, without diminishing materially the profits of the heads of the establishments who gave them employment.

In this country it is not so. Here, intellect is king. Money is not king. True, it is second to nothing else; too often not even to moral worth. But give money to a fool, and how soon is it safely deposited in the pockets of those who have more wit! Arms are not strength. But cut off the arms of the strong man, and how easily, in comparison, can he be overpowered! Such is wealth to intellect. Intellect may be strong, but without arms. Often, this is the explanation of the want of success.

But intellect is king. The intelligent artist stands on the same level with his compeers in other pursuits. His individual position may be more or less favored. He may have more or less of motive to make effort. His facilities, in various ways, may be more or less; but there is no barrier that he may not break down, there is no honor he may not achieve, there is no title of distinction he may not acquire. The agriculturist is not in his way. He is not a rival. On the other hand, he glories in his success. The entire yeomanry of the whole land glory in the names of Watt and Whitney and Fulton and Perkins, and a host of others, who have lived, to say nothing of the present generation, and are as really household gods as those who by their swords achieved their independence.

Sometimes the artisan becomes peculiarly an object of interest. Look at the Crystal Palace, and see how small a space is occupied by the agriculturist. The things there exhibited, numbering thousands and tens of thousands, are almost exclusively the works of art. And how rich, how splendid! What a field is here opened! American mechanic, if the spirit of A MAN is in you, take possession of that field. It is as broad as the acres of God's earth. It is as deep as the sea. It is as rich as wealth.

We had purposed when we began to write, to give another train of thought connected with this subject, but must defer it till our next number.

FRUIT CULTURE NOW, AND FRUIT CULTURE TEN YEARS AGO.

In fruit time, most every body likes good fruit; every body is animated and made thrice glad by the appearance of fine apples, peaches, and pears. Ten years since, horticultural science and the pomological art had not made much impression upon the minds of the people, at least in this country. In New-Jersey, it is true, the fruit-growing business had developed itself to a considerable extent, and the peach was raised with success at that time; but we have now, in the United States, more than five hundred different varieties of peaches, and different kinds are constantly increasing as the horticultural art becomes more and more developed. Horticultural societies are springing up in most every quarter of the Union. In California, the people boast of raising larger fruit than we—boast of their pomological societies, and the luxuriant gardens of Los Angelos; so that the whole country seems to be awakened to the importance of growing an abundance of wholesome fruit. This is as it should be; for there is no branch of agricultural labor so lucrative to the farmer and gardener as is that branch which relates to fruit-raising.

Set out a grape-vine next spring, and in two years, with good management, you can eat, from your vine, fine bunches of Isabella grapes, and they will not injure your appetite, much less the coats of your stomach; on the contrary, you will be benefited by them. Set out a thrifty apple-tree, seven feet high, in the spring of 1854, and in the summer or fall of 1857 you can pluck from it apples that would do credit to any body's table. But you must not manage the tree as it was the people's wont to doctor apple-trees ten or fifteen years ago—set them out in grass sods, without paying any attention to them. Men formerly seemed to think that fruit-trees would stand almost any kind of treatment, and come out well. But this is not true. They must receive due care and attention, and they will pay you a large per centage for the labor you lay out in their cultivation; but if you abuse them by cutting off large limbs unnecessarily, and by ploughing up the lateral roots when the tree requires them to give it nourishment, you cannot expect that they are going to bring you in a large profit. We were taught several years since, that large limbs should be cut off from the trunks of apple-trees; but modern science now teaches that *this* is a bad practice, and results in the material injury of the tree. Old farmers, and I don't know but I may say old gardeners, made it a practice to cut off the lower lateral limbs of their apple-trees, and what they did it for I cannot for my life imagine, unless it was to plough under the trees for turnips and potatoes. But *modern* science says to them, "You have made fatal havoc among your fruit-trees; for, *first*, you have caused them to decay by cutting off their most important branches; and, *second*, you have ploughed *too much* under them, which ploughing has resulted injuriously in respect to their roots and spongioles." Modern horticulture tells us that large limbs do not want removing from fruit-trees; that the spongioles, or absorbent vessels, and the larger roots, must not be ploughed up if we would be successful in raising thrifty apple and pear-trees. It is sometimes necessary, we admit, to root-prune, but such instances, in our estimation, are quite rare, and allowable only where the roots afford too much nourishment to the tree.

The process of pruning of late, has become important to the fruit grower. Prune, but don't prune too much. You can form a tree most generally to your own liking, by judicious pruning. For instance, the apple-tree can be kept low by cutting off the top shoots when it is young, or it can be made

to run up high in the air, by "nipping off" the side branches. But we should be careful, I think, in cutting off lateral branches; for if we run the apple-tree up twenty or thirty feet high, our fruit, as a consequence, will be jammed and spoiled when it comes in contact with the ground. As a general thing, we ought to think to keep our fruit-trees down low to the ground, and thus we would be enabled to gather our apples, pears, &c., without thirty or forty-feet ladders. And another thing; all trees should be pruned while they are young, for it is very difficult to nip the end of the limbs off after the tree attains to the height of twelve or fifteen feet. I have tried the process, and found it to be very hard work for the arms and neck. The grape-vine, no doubt, is greatly benefited by judicious pruning; but some people say that it ought to be pruned but very little, while others say that it should be pruned more than any other plant. It is sufficient to say that it wants thorough care to make it a profitable vine, as do all other plants.

Modern horticulture teaches some new things in relation to propagating trees. For instance, we learn that the grape-vine—the native grape-vine—may be grafted by simply this process: cut it off below the surface of the ground, then split it, and insert the desired kind of grape-scions; bandage it tightly, (use wax if thought to be necessary;) and then close the dirt over it, and it is said its success cannot well be doubted. And our present experience informs us that in reality, the "currant-bush" is wrongly named, for it ought to assume the name of a tree, since, in fact, by judicious pruning, it can be made to grow with a trunk and top like the apple-tree; and by thus pruning it, the fruit, says BARRY, as well as my humble self, grows twice if not thrice as large as it does when the bush is left without culture.

These are facts for the million. Prune, cultivate, and manage your fruit-trees in accordance with the teachings of modern horticulture.

W. TAPPAN.

Baldwinsville, N. Y., February, 1854.

GRAFTING STONE FRUIT.

IT is a mistaken idea that many entertain, that there is difficulty attending grafting stone-fruit. It may as safely and as surely be performed with the plum and cherry as with the apple and pear. A little more care may be necessary, from the fact that the wood of these fruits does not split so easily; and a greater care becomes necessary, in consequence of the different arrangement of the bark, which, with the apple and pear, is easily cleft with the wood, while on trees producing stone-fruit, it runs around the stalk, rendering it liable to be irregularly torn, unless precautions are taken in cleaving to insert the graft.

Hence, we find it necessary to make a longitudinal slit in the bark, with a very sharp knife, previous to cleaving the wood, which should also be done with a sharp instrument. Sometimes, when the bark was very firm, and a disposition was shown in the cuticle to curl, we have found it necessary to secure it in its place by a bandage, and for this purpose, we have used an India-rubber ring, cut considerably smaller than the stalks, and drawn over it when rendered pliable by warming. This will hold the bark in its place until it heals, when the bandage may be taken off.

Another cause of failure in grafting stone-fruit arises from the delay which attends the operation. To be successful, it should be done before the frost

starts at all. We (in lat. 42° 20′) have performed the operation early in March—when it was so cold we were obliged to have a pan of coals with us to warm the wax, in order to keep it pliable—with entire success. It may be performed from that time forward, but more care is necessary, and more doubtful success will attend if they live at all.

Grafting large trees may sometimes succeed very well, but as a general thing, we cannot recommend it. The better way is to get the right kind of stocks, and graft near the ground, when the trees are no larger than a person's thumb. Then, if the scion is like to outgrow the stock, earth can be placed around it, to give strength, and, it may be, new roots, to the scion.

Yours truly, W. Bacon.

Elmwood, January 21, 1854.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

ON MANURE FURNISHING FOOD FOR PLANTS.

Permit me to offer you for the pages of your very instructive journal, the following extract from a work I prepared for another purpose, but which may be acceptable to your readers, and be followed with others, should you so deem it. Yours truly, Benjamin Willard.

Lancaster, Jan. 17, 1854.

We have said that plants contain four *organic* and ten *inorganic* constituents, and that the laws of nature demand that, from the soil and atmosphere, *each one of these* should be available, in order to secure perfect crops; and a *full supply* of each, to secure abundant crops. Perfect ears of corn can be raised on a soil lightly manured, from hills four feet apart, and one stalk in a hill, one ear to a stalk, even if the ground is ploughed only six inches deep, provided the soil is not too wet or too dry. But quite a *different culture and manuring* is required to grow twice the number of hills, three stalks in a hill, and twin ears on most of them. The same will apply to raising wheat.

Waiving remarks on the laws requiring a deeply and finely pulverized soil, for another article, we will, in this, consider *manures* as furnishing food for plants. From repeated experiments, it has been ascertained that the stale of animals contains a great amount of nutriment, or food for plants; that similar effects are produced by applying the droppings of poultry, (guano,) animal manure, (blood and offal of slaughter-yards,) &c., &c. Much of the value of these is liable to be lost by putrefaction and evaporation. By chemistry, we ascertain what this is, and the way to retain it. It is well known that in cleaning horse-stables, especially under the floor, there is a very pungent smell. The same is true in opening a heap of stable manure that has been thrown up and heated. This smell is produced by the escape of ammonia, which is the essence and value of the manure. The loss is greater from privies, because their contents are still richer, and more highly charged with fertilizing gases. How to retain these, and to fix them in a state in which they will remain till used by the growing plants, is a question of great importance, which a *scientific* knowledge of these elements alone can answer.

An English writer says: Before you begin to clean out your stable, dissolve some common salt in water; if a four-horse stable, say four pounds of salt, dissolved in two buckets of water, and poured through the nose of a water-pot over the stable-floor an hour or so before you begin to move the manure;

and the volatile salts of ammonia will become fixed salts, from their having united with the muriatic acid of the common salt; and the soda, thus liberated from the salt, will quickly absorb carbonic acid, forming carbonate of soda.

This powerful solvent will be a valuable agent in preparing the manure for the reception of plants, after it is applied to the soil. Night-soil is rendered inodorous by mixing it with charcoal-dust, (carbon.) Dry pulverized clay, and plaster of Paris, and ten times its weight of peat muck or turf may be added, or any other carbonaceous matter, with good effect. In heaping up manure, a portion of these mixed with it will, in a great measure, prevent the escape of ammonia, by their chemical action as above described. I have long practised sprinkling pulverized charcoal, or plaster, daily in our stables, and also in heaping up my manure with a free use of salt. The result has been most satisfactory. This gives it double value when kept under shelter. When mixed with alternate layers of meadow mud, treble the quantity may be obtained.

STARCH MANUFACTURE.

Mr. Edward Tucker, Esq., Belfast, Ireland, has invented a process of manufacturing Starch, from grain and potatoes, which appears valuable. It is substantially this: The reduced grain or potatoes is submitted to the usual process of fermentation, and is washed, so as to separate the bran, or refuse of the potato, from the rest of the materials forming the substance to be treated. The starching liquor is then run into a vat and allowed to remain for about thirty-six hours, for precipitation. The supernatant liquor is next run off, or removed, and the precipitate is broken up. A solution of sulphate of soda, or Glauber's salts in boiling water, is prepared, in the proportion of about 13 lbs. of the salt to one ton of the wheat, or other grain under treatment; and after cooling down this solution, it is poured into the precipitated starch; and the vat being filled up with water, the entire contents are thoroughly mixed, and intimately incorporated by stirring. The mass is then allowed to stand for twenty-four or thirty hours perfectly quiescent. In the subsequent process, technically known as the "fine shift," when the water and slimes are removed, another solution of the same salt is employed, but in much smaller proportions; about 3 lbs. weight only being applied to one ton of wheat. At this stage, in combination with the sulphate of soda, a portion of sulphuric acid is used, in the proportion of about one quart of the acid to the produce of four tons of wheat. The acid, in a diluted state, is poured gradually into the vat, which is then nearly filled up with fresh water; and the whole contents are thoroughly mixed by agitation. When the starch has been precipitated, it is finished, and prepared for sale, and used in the ordinary manner. The patentee remarks that he has found sulphate of magnesia, muriate of soda, and other salts and acids, available for a similar purpose. This general process renders pure all water suitable for manufacturing starch, however hard and unsuitable it may have been originally. The pure starch is also better separated from the glutinous constituent of the grain; whilst the manufactured starch is superior in purity, sweetness, strength, fineness of texture, and whiteness, as compared with all starch made in the usual way; and the yield is greatly increased.

ELECTRIC GAS.

We publish the following statements of the *London Mining Journal*, and also the comments of the *Scientific American*, with our own views of the subject at the close:

The proverb says, "There is nothing new under the sun;" we have been led to doubt the truth of this from having witnessed a private exhibition of "electric gas." That is, gas produced from water by means of electricity, and by which is developed, for the first time, the extraordinary phenomenon of burning the two gases together, without the least fear of explosion, which the most scientific and learned of men have ever hitherto deemed an impracticability.

The gases produced by electricity are free from all possibility of explosion. Its production requires no expensive materials, nor are large premises necessary, whilst all existing pipes and lamps may be used if requisite; and in the economy of production there will be a saving of at least fifty per cent. upon the present cost of coal-gas.

Mr. Gamble, a scientific gentleman, connected with gas-works and railways, has made a report on this electric gas, in which he says:

"I cannot find language sufficiently expressive to convey the astonishment I experienced at witnessing the effects of the electro-magnetic machine in the production of gas applicable for the purpose of artificial light and heat by the decomposition of water. Water is found, on a chemical analysis, to be composed of two permanently elastic fluids, or gases, called oxygen and hydrogen. When water is decomposed, an enormous increase in volume is the result; this increase is about 2,000 times. It has been long known that water is decomposable by electrical agency, but this has been generally effected by the action of a galvanic trough, at an expense so great as to be commercially prohibitory. But by the magnetic apparatus the expense is very trifling, being little more than interest on first cost of the machine, with a small addition for renewals, and the cost of the motive power. The decomposition of water for the purpose of obtaining a gas applicable for the production of artificial light and heat, has long engaged the attention of chemists: and numerous discoveries professing to attain this desideratum have been made. All these (so far as I am acquainted with them) have for their object the separation of the hydrogen gas only; no attempt, I believe, has hitherto been made to make use of the oxygen. The general mode in which the hydrogen is obtained, is by passing steam through scrap-iron, or a variety of other materials heated to a high temperature; in this manner, the vapor of water is decomposed, the oxygen unites with the heated solid body, and the hydrogen is liberated in the gaseous form, and collected in a gas-holder. But the gas resulting from the decomposition of water by the magnetic machine is altogether different. Here is collected not merely the hydrogen, but the oxygen also; this increases the volume of production one-third, and the gas is altogether different in its composition.

It is an invention, the most gigantic of the age of wonders."

[The above is a very long quotation, and we would not republish it unless we thought of accomplishing some good thereby. We will therefore point out the errors contained in it, and show the utter unscientific qualifications of its author, who is reported to be "a scientific gentleman." And we do this as a duty, because we have seen the above republished in many of our ex-

changes, and we certainly do not wish nonsense to go abroad uncorrected, under the panoply of science.

It is well known to almost every child in our land, that water is composed of hydrogen and oxygen, and when decomposed into these elements, they increase in bulk about 2,000 times their volume—as water. But it is not true that water has generally been decomposed heretofore, by passing steam through red-hot scraps of iron, by which process the hydrogen is set free, while the oxygen unites with the metal. Zinc and iron, submitted to the action of dilute sulphuric acid, will generate hydrogen by decomposing the water; but platinum, heated to a white heat, if plunged into water, will set both its oxygen and hydrogen free.

But water has been decomposed into its elementary gases many times by the very plan set forth above, namely, electricity. This was Paine's plan of decomposing water to obtain his light. It is more than twenty years since this was first done by the magneto-electrical machine of Mr. Saxton, a scientific American, residing in London: he accomplished the very thing said now to be "the most gigantic invention of this age of wonders," and in the very city where the above affair has been thus unblushingly announced by *a scientific gentleman.*

In 1838, Dr. Page, formerly of the Patent Office, made a great improvement on the magneto-electrical machine, by which powerful currents were generated, perfectly applicable to the decomposition of water.

The gases of water are not fit for illumination, unless burned on lime or chalk, forming the Drummond Light. This light is very expensive and troublesome. The gases of water cannot be conveyed, and used in pipes like our common carburetted hydrogen, nor can they be used with safety. A jar containing hydrogen and oxygen in the proportions for forming water, will explode with great violence if a spark of electricity be passed through it; these gases will also explode if a light of any kind be applied to them.

The statement above, that the gases of water "are free from all possibility of explosion," is an unqualified untruth, and so is all that is stated about its cheapness of production. These gases can be safely burned by well-known apparatus made for the very purpose; still they are dangerous. They produce, when burned, an intense heat; a heat so great, indeed, as to melt platinum like wax, by Dr. Hare's blow-pipe; but unless burned upon lime or some solid incandescent substance, as we have already stated, they will produce only great heat, but not good light. In the above extract which we have quoted, there is nothing new except that which is *untrue.—Scientific American.*]

The literal sense of the proverb quoted above, "There is nothing new under the sun," so far as inventions and new applications of long-known principles are concerned, American mechanicians have long since discarded. There are a thousand things that are new, and many, which, in one sense, never will be old, for they will be exploded as soon as they are brought to the light.

The endeavor to manufacture gas by the decomposition of water, has been often and perseveringly pursued by many persons, who were both practical and scientific; but, as the editor of the *Scientific American* observes, without *available* success.

Still, we have some substantial objections to make against the positions taken, both by the London editor and by our learned neighbor. Both are well versed in the principles of science applicable to the question discussed, no doubt; but is not the latter going too far in denying what is claimed by

the London editor, as having now been accomplished, simply because it never before was accomplished? Even the chemists here have no knowledge of the mode of doing it; it may perhaps be done.

When the elements which compose water are transformed into gases, and are brought into contact, they are explosive. This has long been known. But suppose some fortunate experimenter should be successful in arranging machinery, with the requisite *chemical* contrivances, so to speak, as to modify essentially, by combination or otherwise, one of these elements, either hydrogen or oxygen. It is obvious that the conditions of the mixture may be so changed, that there is no longer any danger of explosion. Whether Mr. Gamble has, in fact, accomplished this, remains to be proved. This result need not be considered impossible, even if it remains yet unachieved. The compound blow-pipe, as now constructed, is considered perfectly safe, and yet two gases combine to give to it its tremendous power.

There is another point, on which the *chemistry of the past*, so to speak, must not be too positive. Reference is made above to the discovery of Mr. Paine. It is not perhaps generally known that the results which he obtained were accomplished by a very simple modification of the machinery in common use. He was always willing to exhibit every part of his apparatus, with the exception of one piece, scarcely larger than one's fist, namely, the helix. The change made in the construction of this magic coil secured to him his measure of success, whatever that may have been.

But what was this success? Perhaps the best answer may be a reference to his English patent. He succeeded in producing an excellent light. The economy of the process was also quite satisfactory. But the machinery was in constant danger of being blown to pieces, and this danger he long tried in vain to remove. When, at last, he supposed that this difficulty was also overcome, he found that there was another "more excellent" way, namely, the use of atmospheric air without decomposition. This ghostly obstacle was thus removed far away from the path of the experimenter.

But it was the "electric light" of Mr. Paine which was the subject of general discussion, and which led more than one very respectable committee to visit the beautiful town of Worcester. Among these, one committee, of which the late accomplished President of the Boston Gas-Light Company, Mr. George Darricott, was chairman. Mr. D. reported that the light exhibited by Mr. Paine was a good light, but they, the committee, did not believe that it was produced in the manner described by Mr. Paine. One reason assigned for this disbelief was because the gentleman, then in attendance, a brother of Mr. P., was very unwilling to take the machinery to pieces, and when he finally did separate its parts, and then replace them, the light was less brilliant than before. Now, the fact was, this brother had no inclination to run the risk of being blown up, and by mixing his gases with atmospheric air, this liability was greatly increased. As to the second reason, we are surprised that so sensible men should attach to this fact any importance. All illuminating gas gives a dim light when mixed with atmospheric air. We happened to be in Worcester the first evening in which coal-gas was used for lighting the town, and we and other guests of the American House (and a capital house it was, and is still) complained bitterly of the dimness of the lights, before we had an explanation of it.

Another matter of fact in respect to which these gentlemen were mistaken, and on which the comments above quoted need some modification, is in reference to the mode of giving brilliancy to the flame of hydrogen. This Committee stated that, in their opinion, the passage of the gas through "cold

turpentine" would not catalyze it sufficiently to give it the brightness required. They were mistaken. With the improved machinery, there was nothing to be desired on this point. Our learned neighbor repeats the same thought, and suggests that lime or chalk, as used in the famous *Drummond* light, and which many of our city readers have seen on the top of Barnum's Museum, is necessary to impart to it the requisite brilliancy. This is true only when used in connection with the old machinery. Paine's experiments on this point were quite satisfactory. *Why* they should be so, why so slight a change in machinery, or why any change in machinery, should so change the properties of hydrogen gas, we do not know, nor so far as we have learned, does any one pretend to explain. The whole process of "catalysis" is utterly inexplicable. The greatest chemists do not pretend to be wiser on this subject than their unlearned neighbors.

We do not, however, attach so much importance to the discovery of "electric gas," as does the editor of the *London Mining Journal*, even though all that is claimed for Mr. Gamble's discoveries should appear to be true. We have something still better. There can be nothing cheaper than atmospheric air, and no carbonizing mixture has yet been offered to us, cheaper or more convenient than the Benzole mixture of the American Gas Company, now used in producing light at No. 3 Broadway. But we are open to conviction, and shall rejoice to be able to set forth a greater good, when it shall be shown to us.

SUBSTITUTE FOR GUTTA PERCHA.

Dr. Riddell, officiating superintending Surgeon of the Nizam's army, in making experiments on the Muddar plant of India, (*Asclepio Gigantea,*) had occasion to collect the milky juice, and found that as it gradually dried, it became tough and hard, like gutta percha. He was induced to treat the juice in the same manner as that of the gutta-percha tree, and the result has been the obtaining of a substance precisely analogous to gutta percha. Sulphuric acid chars it; nitric acid converts it into a yellow resinous substance. Muriatic acid has but little effect upon it; acetic acid has no effect, nor has alcohol. Spirit of turpentine dissolves it into a viscid glue, which, when taken between the finger and thumb, pressed together, and then separated, shows numberless minute and separate threads. The foregoing chemical tests correspond exactly with the established results of gutta percha. It becomes plastic in hot water, and has been moulded into cups and vessels. It will unite with the true gutta percha. The Muddar also produces an excellent fibre, useful in the place of hemp and flax. An acre of cultivation of it would produce a large quantity of both fibre and juice. The poorest land suffices for its growth, and, no doubt, if well cultivated, there would be a large yield of juice and a finer fibre. A nearly similar substance is procurable from the juice of the *Euphorbia Tirucalli*, only, when it hardens after boiling, it becomes brittle. The subject is most important; and if common hedge-plants like the foregoing can yield a product so valuable, the demand for which is so certain quickly to outrun supply, a material addition will have been made to the productive resources of the country.—*Journal of the Society of Arts.*

FEMALE ACCOMPLISHMENTS.

We take the following very pleasing paragraph from the address of C. P. Holcomb, Esq., before the Maryland State Society, of which we have before given some notice:

As showing the interest English ladies take in agriculture, I cannot but relate a casual interview I chanced to have with an English lady, in going up in the express train from London to York. Her husband had bought a book at the stand as we were about starting, and remarked to her that "it was one of her favorite American authors—Hawthorne." I casually observed, "I was pleased to see young American authors found admirers with English ladies," when the conversation turned on books and authors. But I said to myself pretty soon, "this is a literary lady; probably her husband is an editor or reviewer, and she handles the 'scissors' for him; at all events, I must retreat from this discussion about authors, modern poets, and poetry. What should a farmer know critically of such things? If I was only in those fields—if the conversation could be made to turn on crops, or cattle, then I should feel quite at home." I finally pointed out a field of wheat, and remarked it was very fine. The lady, carefully observing it, said: "Sir, I think it is too thin—a common fault this season, as the seeding was late." "Those drills," she added, turning to her husband for his confirmation, "cannot be more than ten inches apart, and you see, sir, the ground is not completely covered; twelve, and even fifteen inches is now preferred for the width of drills, and two bushels of seed to the acre will then entirely cover the ground, on good land, so you can hardly distinguish the drills."

If the Goddess of Ceres had appeared with her sheaf, or her cornucopia, I could not have been taken more by surprise. A lady descanting on the *width of wheat drills, and the quantity of seed!*

"I will try her again," said I, "this may be a chance shot," and remarked, in reference to a field of ploughed ground we were passing, that it broke up in great lumps, and could hardly be put in good tilth. "We have much clay-land like this," she replied, "and formerly it was difficult to cultivate it in a tillage crop, but since the introduction of Croskill's Patent Clod-Crusher, they will make the most beautiful tilth on these lands, and which are now regarded as among our best wheat lands."

The conversation turned on cattle. She spoke of the best breeds of cows for the pail, (the Ayrshires and Devons;) told me where the best cheese was made, (Cheshire;) the best butter, (Ireland;) where the best milk-maids were to be found, (Wales.) "Oh!" said I, "I was mistaken; this charming, intelligent woman, acting so natural and unaffected, dressed so neat, and so very plain, must be a farmer's wife, and what a help-mate he has in her! She is not an extravagant wife either, not an ornament about her; yes, a single bracelet clasps a fair rounded arm—that's all." The train stopped at York; no sooner had my travelling companions stepped upon the platform, than I noticed they were surrounded by half a dozen servants—men and maids—the men in full livery. It turned out to be Sir John and Lady H. This gentleman, I learned, was one of the largest landed proprietors in Berkshire, and his lady, the daughter of a nobleman, a peeress in her own right; but her title added nothing to her—she was a noble woman without it.

It is a part of our task to excel in horticulture, in which female taste and skill must aid us. We must embellish our homes; we must make them

sweet and pleasant homes. The brave old oaks must be there; the spacious lawn with its green sward, and the fruit orchard, and the shrubbery, and the roses; the vines festooned and trained about the walls and balconies; even the birds will think *that* a sweet home, and will come and sing, and make melody, as though they would "teach the art to imitative man."

Such a home will be *entailed* to our children, and to their children, not by statute laws of entail, but by a higher law, the law of nature, through the force of sympathy, the associations of childhood,

"The orchard, the meadow, the deep-tangled wild wood,
And every loved spot which our infancy knew."

These will hold them to it—these early memories, which we should take care to deepen with a binding and indissoluble tie.

Talk not, then, O ye fathers and mothers! to your sons of forensic fame; of senatorial halls; of the distinction of professional life; or of the gains and emoluments of commerce. It is not for our class, surely, to furnish more recruits to this hazardous service, in which so many of the youth of the country have been lost—lost to any useful purpose of living; themselves miserable from that hope deferred that makes the heart sick; or disappointed of the objects of life, have been overwhelmed by bankruptcy and ruin. *Give to your sons the pursuit of Washington*, who gloried in being a FARMER; the field and the council-chamber he sought from duty, but his farm at Mount Vernon, where he wisely directed the plough, from choice and pleasure.

"Wide—wide may the world feel the power of the plough,
And yield to the sickle a fullness delighting;
May this be our conquest, the earth to subdue,
'Till all join the song of the harvest inviting;
The sword and the spear
Are only known here,
As we plough, or we prune—or we toil void of fear,
And the fruit and the flower all smile in their birth,
All greeting the Farmer, the Prince of the Earth."

FURS AND SKINS.

A GREAT trade is done in these on the Missouri river and at St. Louis, and much romantic incident as well as wealth is connected with the traffic.

The silver fox is found only on or near the mountain tops, where the color is perpetual. The trappers take them principally from the Utah, Sierra Nevada, and other portions of the dividing ridge west of California and Oregon. Even there, however, they are rare. The fur of the silvery gray is larger, thicker, and finer than that of any other fox. It derives its chief value, however, from its extraordinary and beautiful color. The skins, when pure, will readily command from $100 to $150. They are used for muffs, and for trimming female articles of dress. The *Democrat* says that the fur trade has declined in importance within the last twelve years. At that period, fur was held at $6 and $8 per lb., but it is now generally superseded by silk and plush. Twelve years ago, no hat was fashionable that was not of beaver, and the cost of a good beaver hat in St. Louis was from $14 to $25; and of caps, made of other skin, $15 and $20, and even more. Since the decline in the price of beaver, that kind of game has been visibly on the increase. Buffalo and other large game, however, do not increase. They have or are rapidly abandoning the large extent of plains over which the immigration pours. Being thus herded in a narrow compass, the supply must begin materially to fail in the course of a few years.

NEW COAL MINE.

Mr. Emmons, State Geologist, in North Carolina, in a letter dated December 27, 1853, to the *Raleigh Register*, gives some particulars of a very valuable development of a coal field:

It appears that the first seam was cut at 360 feet. When I first saw the statement, some weeks ago, in the public prints, I remarked that this five-foot seam is not the main seam. There is at least another just below it, which has more than twice the thickness of this. So that it will be found my estimates of the quantity of coal in the Deep River basin will far exceed the amount I stated in my report. I am not at all surprised at the results of the boring. I could not expect, from my own observations, that the first seam would be cut nearer the surface than 350 feet at any place. When the seams are covered with the entire mass of slates, I expected also, and sustained my expectations, that the seams would have become flatter at a distance from the out-crops.

It will appear, then, that I am justified in assuming the position that, at the point within the out-crop, where the auger penetrated the slates, there is three times as much coal to the acre as I stated in my report. This will make 24,900 tons to the acre; or, for every 1,000 acres, 29,400,000 tons. This coal, considering its quality, will be worth in market $7 per ton, and will amount to $203,800,000.

It may be said that I am holding out false lights; but I abide my time. Somewhere on Deep River, there remains to be built a city greater than Lowell. Deep River has the water, the coal, the iron, the copper, the corn, the wheat, and the cotton. Lowell, of my honored native State, had the water only; and there arose, by the industry of a few men, a great city. If the old State can't build one, somebody north of Mason and Dixon's line will, and call it after his own name.

IOWA COAL FIELD.

This zone of limestone has an average width of twenty-five miles; it circumscribes, with a short interval, the great coal-field which occupies the whole of south-western Iowa, extending north to latitude 42 deg. 30 min.; and separates it from the Illinois coal-field by a calcareous belt, varying in width from twenty-five to fifty miles.

Of this coal-field, (in Iowa alone, not including its extension south into Missouri,) the dimensions are as follows:

Its average width from east to west is less than *two hundred miles;* its greatest length from north to south, about *one hundred and forty miles;* its contents, about 25,000 square miles. It extends, measured in a direct line, nearly two hundred miles in a north-westerly direction, up the valley of the Des Moines.

After crossing the Iowa boundary line into Missouri, the boundary line of this coal-field bears nearly south, through Clark, Lewis, and Marion counties, to near the junction of the three forks of Salt River; thence through the western part of Ralls county, towards the head-waters of Rivière au Cuivre, in the eastern part of Audrian county, and north-western corner of Mont-

gomery county; thence it sweeps in a south-westerly curve through Calloway county, towards the Missouri River, which it crosses near its confluence with the Osage; leaving a belt of country some ninety miles wide, between this coal region and the out-crops at Charbonnière, and the coal-pits worked on Rivière des Peres, in St. Louis county. These are, in fact, outliers of the Illinois coal-field. From the Missouri River, the boundary bears, [illegible] a westerly curve, up the valley of the Osage, north of that river, which it crosses, but for a very limited distance only at three points; in Camden county, near the mouth of Niangua; in St. Clair county, near the mouth of Sac River; and in Bates county, near the confluence with the main river of the Little Osage. Thence the line bears, with a northerly curve, towards the western confines of Fayette, recrossing the Missouri at Wellington; thence up the valley of that river, keeping from ten to twenty-five miles from the river, to the State line.

The coal measures of Iowa are shallow, much more so than those of the Illinois coal-field. They seem attenuated, as towards the margin of an ancient carboniferous sea; not averaging more than fifty fathoms in thickness. Of these the productive coal-measures are less than a hundred feet thick. The thickest vein of coal detected in Iowa does not exceed from four to five feet; while, in Missouri, some reach the thickness of twenty feet and upwards.

COAL ASHES.

For several years after the use of hard coal was introduced into this part of the country, the ashes were considered of no value. This has been found a mistake.

We long ago used them on the walks of our door-yards or other thoroughfares, and found them to be very useful, securing a hard path that was not easily broken. Sometimes, indeed, it is desirable to cover them with a thin coat of fine gravel, or some other substance equally clean.

On some soils, which are too loose and too "light," we have no doubt that coal ashes would be permanently beneficial.

Again, on a hard clay soil, we know of nothing that is more promising. It contains much silex, in which all clay soils are deficient.

But silex is not the only element which it supplies. It contains alumine, carbon, and iron, in a soluble form, nearly to the amount of twenty per cent. Hence, it is obvious that it is a valuable manure for many varieties of soils.

Cannel Coal.—It is now settled, beyond a doubt, that Western Pennsylvania possesses inexhaustible quantities of cannel coal, of excellent qualities. It is found in Beaver, Armstrong, and Indian counties, and, no doubt, exists in Butler, Jefferson, and Clearfield counties. The quantities already discovered are immense. Western Pennsylvania possesses fine water-power, inexhaustible supplies of coal and iron ore, a fertile soil, a salubrious climate, magnificent scenery, and a central position.

HINTS ON BREEDING GRAZING CATTLE.

We commend the following suggestions, which we take from the New-York *Spirit of the Times:*

Some breeds of cattle are disposed to carry fat internally, and others externally, while in others it is deposited between the layers of muscles, forming what is called "marbled meat." In the races of cattle disposed to carry fat externally, are the once-famed "Dishley breed," with large fatty rumps, and the African ox, with his immense humps of fat on his shoulders. These animals have little or no internal fat. The Herefords are distinguished for this peculiarity of carrying much external fat, making these exceeding good "handlers." The "improved Durham" are highly prized for their "marbled beef."

The animals which reach the greatest weight of muscle and fat, with the least consumption of food, are the Herefords and Durhams; the former breed will fatten, at the age of two and a half years, to one thousand pounds; while nearly all other breeds require at least one year longer to attain this weight—an important fact that should not be lost sight of by breeders of grazing cattle.

In calling attention to the "principles" of breeding, we cannot perhaps do better than examine the "rules" followed by the most successful English breeders.

The following are the means by which Bakewell established the permanent character of his cattle:

He first selected the best animals of their respective kinds, and coupling these, endeavored to develop in the highest degree those characters which he deemed good, looking mainly to those peculiarities of conformation which indicate a disposition to fatten. He arrived at producing a large cylindrical body, and a smallness of the neck, head, and extremities, or what is called fineness of bone. A saying of his, often quoted, is, that "all was useless that was not beef." Hence, the principles which guided him, were the most meat from the least food, the least offal, and the size of the best joints: smallness of the bones, aptness to fatten, and arrive at early maturity, he kept constantly in view. He always bred from the best animals, making the very best selections of both male and female. He thought the production of a large quantity of milk was inconsistent with the property of yielding much meat.

Charles and Robert Colling made many improvements in the Durhams. They, like Bakewell, seem to have regarded size in their animals as a quality secondary and subordinate to those which they wished to produce, and to have directed almost exclusive attention to beauty and utility of form, and development of the properties of early fattening. Having, by skillful selections, become possessed of animals with the properties sought for, they continued to breed in and in.

C. Colling's first great improvement was made on a young bull, which he obtained by a kind of chance of a poor man, from a cow fed by the roadside. His sagacity led him to see the value of the young animal. He likewise afterwards obtained a cow, which, however, on being removed to superior pasture, became so fat, that she did not again breed. The calf inherited the same property, and as he grew up, became so fat as to be useless as a bull. This bull was termed Hubback: he was the sire of the celebrated Bolingbroke.

Colling, by continually breeding from his own stock, seems to have pushed refinement in breeding to its limits, having produced that delicacy and impairment of constitution which never fails to accompany a continued intermixture of blood in a limited number of animals. He now attempted various crosses with cows of various other breeds; but his most fortunate cross was with a most beautiful polled Galloway cow, of a red color, and his "short-horn" Bolingbroke. The produce, being a male calf, was in due time conjoined with Johanna, a fine short-horn cow; the produce being another male calf, was put to "Lady," a true-bred short-horn. This cow, with her descendants, at his sale in 1810, forty-eight lots, brought £7,115, or about $716 each.

Michael Dobson, one of the earliest improvers of Durhams, visited Holland, for the purpose of selecting bulls of the Dutch breed. His stock were of great size, coarse, great consumers of food, did not fatten very early, produced much internal fat, and were well adapted to the uses of the dairy. This district, Holderness, was distinguished beyond any other part of England for its dairy stock, and many cows of this variety are yet to be found more or less mixed with the Durham blood. The effect has been to improve their form, but to impair their milking properties; nevertheless, the modern Holderness still stand in the first rank of dairy cows, and the great London dairies are chiefly supplied by them.

The following are the principal characters, found in animals possessing the faculty of fattening readily:

The head small, face long from the eyes to the point of the nose, frontis broad, muzzle fine, nostrils capacious, neck short, light, nearly straight, and small from the back of the head to the middle; full, clear, and prominent eye; the back straight from the top of the shoulders to the tail, which should fall perpendicularly from the line of the back; the chest wide and deep; the ribs deep and circular—this depth of "barrel" is most advantageous in proportion as it is found behind the elbow; hips wide apart; loins and back well filled up with muscle; quarters full and large; flank deep and well filled out; bones small and flat, but not so fine as to indicate too great delicacy of constitution; the hide, a very important part, rather thin, expansive, and mellow, well covered with fine and soft hair.

These are the principal characters which indicate the property of secreting the fatty tissue, and they may be said to be universal, extending to all domesticated animals, the horse, the sheep, the hog, the dog, and the rabbit.

In breeding, always observe the following rules:

1. Breed from sound and healthy animals.

2. Breed from the most perfect in form, and take a special care that a tendency to the same defect does not exist in both parents.

3. Breed animals of a distinct and positive character, to insure a certain description of offspring.

4. Select the very best males; for the produce inherit much more of the qualities of the male, whether good or bad, than they do from the female.

5. In crossing, the true system is to take one cross, and then return and adhere to the original breed.

It is a common practice, in the rearing of blood-stock intended for exhibition, to place the young animals, shortly after they are weaned, in a narrow stall, or box, and to feed them with milk and meal—sometimes sugar an molasses are added—and afterwards with grass, hay, carrots, &c.; the animals look fat and plump, and their owner is satisfied. Now, the effect of this is without doubt to lessen the size of the lungs and other organs con-

cerned in nutrition, and produce a breed that will carry an immense mass of fat, come quickly to maturity, and also, when they breed, produce the same qualities in their offspring.

By breeding from animals having a great tendency to fatten, or from those kept constantly fat, function must reäct on organization, and at last these qualities become not only increased, but fixed, in the race. By functions reäcting on organization, is meant, when an organ—the lungs for instance—becomes diseased in consequence of not performing their natural functions, the diminished structure is likely to be reproduced in the progeny of an animal so affected; hence the reäction. The great secret of rearing animals for profit, is to obtain the fat kind, and supply them with all the food they desire, from their birth to maturity.

But, however desirable these qualities may be in animals intended for the butcher, others of an opposite character must be attended to: these are, weight of muscle, constitution, and capabilities of propagating their species; to produce all which, quite a different system must be adopted. The proper development and growth of muscles depend in a great measure upon the use that is made of them; as a set of muscles in active exercise increase in size and vigor, while those that are but little used, lose their firmness and diminish in bulk. Cattle require not such exercise as would harden the muscular fibre, but just so much as would tend to keep them in health, and prevent their getting too fat.

By merely feeding an adult animal, we have not the power of increasing its muscular substance, but we have great power over the increase of fatty matter, which, along with the fleshy fibre, forms food.

Daily experience fully proves the folly and impolicy of neglecting young stock of any kind; but especially is such neglect injurious in the case of those animals whose value depends on their size, symmetry, and constitution, which are mainly promoted by a careful provision of shelter, and a liberal supply of food during the first two years; as nearly the whole of the fleshy parts (muscle) of an animal, which afford most profit, are assimilated during the period of its growth.

WILL DRY GYPSUM ABSORB AMMONIA?

How shall we secure the ammonia of our barn-yards, is one of the great questions of the day. Among the discussions of the subject which we publish, we present the following remarks from the *N. E. Farmer*, and add only that the experiments described appear to have been very properly managed.—Eds. P. L. A.

That is, will dry ground plaster, spread on the manure heap, prevent the escape of its ammonia, so that on entering the stable where horses are kept, or the barn-cellar, where the droppings from the lean-to are collected, we shall not smell any odor from them?

As these escaping gases are very valuable, and as the amount of plaster now annually used for this purpose amounts to a heavy item of expenditure in farm husbandry, the question is an important one.

That the plaster so used upon manures will absorb the ammonia, the editor of the *Maine Farmer* says he "has always considered to be the true doctrine, he having sprinkled it on fermenting heaps of horse-manure, and thereby destroyed the odor." He adds, "we have also scattered it in and about

privies, and neutralized the offensive odors thereof, for a time; and without any further examination, supposed the theory correct."

On the other hand, the editor of the *Rural New-Yorker* "denies that plaster will thus unite with ammonia, unless it be dissolved." To establish this theory, he says, a scientific farmer and writer took some plaster and guano, and rubbed them together in his hand, and upon applying it to the nose, found that "instead of fixing the ammonia, the plaster aided the decomposition of the guano, and the ammonia was driven off with considerable rapidity."

The test was a simple one, but was it a fair one? Could a sufficient quantity of plaster be held in the hand to neutralize the odors of even a single thimble-full of so concentrated and powerful a manure as guano? We think not, and do not consider such a test as settling the question.

The editor of the *Farmer*, in support of his theory, quotes the experiments of another practical man, Professor Campbell, of North Carolina, "by which it would seem that plaster, in a dry state, does actually absorb, or rather decompose, carbonate of ammonia, while flying off from fermenting manures."

Mr. Campbell made an experiment which he says was conducted as follows:

"A barrel was filled with fresh scrapings from the stalls of horses. Over the manure, as thrown in, a little ground plaster was sprinkled from time to time. After the barrel had been compactly filled, it was allowed to stand some weeks, until it had gone through the heating process, which always takes place when newly collected manure is thrown into heaps. But during this heating or *fermentation*, (as it may with propriety be called,) there was none of that 'vapor' or strong odor which ordinarily arises from fermenting manure heaps. When the mass had become cool, clean rain-water was passed through it, and collected at the bottom of the barrel. This water was found to contain one of the elements of plaster, and one of the volatile substances (carbonate of ammonia) above alluded to. On emptying the barrel, a white powder, looking very much like plaster, was found mingled with its contents. But when tested, this powder was found to contain only one of the elements of plaster, while it contained also one element of the volatile carbonate of ammonia just mentioned."

We have great confidence in the theory of the editor of the *Farmer*, and that confidence has been gained by several years' practice of that theory. When the horse-stalls have been neglected, and the odor arising from them has become exceedingly pungent, we apply the dry plaster, and, *presto!* the stalls are sweet. And so of the cattle-stalls, the cess-pools, the drains, and any other olfactory nuisance that comes in sight.

This dry plaster, however, is never applied to dry substances. When thrown upon the horse and cattle-stalls, the litter and the floor are wet; if they were dry, there would probably be no odor. But who has dry piles of manure in these days of inquiry and progress? Certainly not the man who is in the habit of using plaster. The dry heaps under the barn windows, resembling camel's dung that has bleached an age on deserts of sand, belong to men of another age, who laugh at you for expecting to find *virtue in stones*, and look upon *ammonia* as a cabalistic word, which, like Pandora's box, is filled with all manner of evil.

The theory of the editor of the *Rural New-Yorker*, in this view of the case, may be correct; we do not believe, however, that it is necessary to go to the trouble of leaching the plaster, and using the water thus impregnated with it.

The best mode of retaining the valuable properties of manures, until they are wanted for use, is to apply to them daily such portion of finely pulverized, old meadow-muck as will take up the juices, so that none of them will leach out. This muck is the cheapest, most accessible, and convenient, and at the same time one of the most capacious absorbents and best deodorizers at the command of the farmer. Try it in the filthiest pool, or on the most *fragrant* heap of offal you can find, and see what a magic power it possesses! Keep a winrow of it in the cellar, in front of the place where the droppings from the stall accumulate, and each day cover them so as to add as much again muck as there is of the droppings, and the whole mass shall be of as much value as the same number of loads of pure droppings, left

"To waste its sweetness on the desert air."

No man in this State was better qualified, we think, to pronounce an opinion upon this subject, than the late Mr. Phinney, of Lexington; no other person, probably, had used so much muck, or made so many careful experiments with it upon almost all kinds of crops. We have often heard him say that *three* loads of compost, prepared as we have described above, were fully equal to three loads of the unmixed manure.

COTTON.—MODE OF CULTIVATION.

Messrs. Editors:—In accordance with my promise in my article on guano, I propose giving you my views on the culture of cotton.

The cotton plant is not easily suited in soil and climate, and it seldom happens that they are so combined as to perfect the plant.

The best cotton lands are of a deep, rich, soft mould, a medium between the spongy and sandy. The most important part of the cultivation consists in a judicious and proper preparation of the soil for planting. All cotton lands should be broken up deep and close, at the latest, by January; it would be better to have it done in November or December, but picking out generally prevents it. Plough deep, the deeper the better; use the subsoil as much as possible; even if your land has been in cotton the year previous, break it up deep, at least one foot.

About the 25th of March, I prepare for planting. I lay off my rows from thirty-two to thirty-six inches wide. Cotton should be so planted, that when it arrives at maturity, the branches will slightly interlock on every side. I lay off these rows as deep as I can with a shovel or scooter from two to three inches broad; the plough is one half inch broader at the point. I then drill my manure as regular as possible. I follow with a turning plough, laying on two furrows, raising the bed as high as possible; I then break out the middles. If the land is low, I draw up the bed with hoes; with a small, narrow plough, I lay open the bed, making a furrow of uniform size and depth. A careful hand follows, strewing the seeds evenly in the furrow, always using enough to secure a good stand, (about three bushels per acre.) I cover with a board of hard wood, an inch or inch and a half thick, seven or eight inches broad, and a foot in length, slightly notched in the centre. The board is screwed on the plough-foot, and when drawn over the row, covers the seed nicely. If the ground is well broken up, and the seed well planted, half the labor is done.

As soon as the cotton is up, I commence thinning out, leaving bunches

from eight to twelve inches apart, passing along rapidly with hoes. I follow with a small shovel, running close to the cotton, ploughing very *deep*, and throwing up a little light soil to the roots of the cotton. This ploughing, too, should be close and deep, so that the roots may easily penetrate the soil, as they strike deep into the earth. If the ground is very rough, the ploughs shall precede the hoes.

In the second working, which should follow as soon as possible, the ploughs go before the hoes. This ploughing also should be deep and close. I now bring my cotton to a stand. This should be carefully done, and the hoes attentively watched, as a stand is often ruined by this working. Sore shin, rust, &c., are often chargeable to the way in which this working is done. I now leave one stalk in every bunch heretofore left, making my cotton stand from eight to twelve inches apart. I throw a little dirt to the stalks of cotton, and leave the crop clean, free of grass and weeds. The cotton will then grow off finely, and not suffer for work for twenty or twenty-five days. Every subsequent ploughing should be shallow and not close; sufficient, however, to cover all the small grass that may have sprung up since the last ploughing. The hoes should also pass over the crop, killing such grass and weeds as the ploughs cannot reach. It is difficult to say how often the crop should be ploughed, as that will depend a good deal upon the seasons. My rule is to keep the crop clean of grass and weeds, and to keep the earth well stirred up until the branches interlock, or the cotton commences to open. The two first ploughings should be deep and close, the subsequent one shallow. I use the sweep, bow, twister, side-plough, scraper, and the old-fashioned shovel, in my crop. The selection of seed is also a matter of great importance. But I must close, for fear I tire you. JOHN P. KINARD.

We again urge our Southern readers to multiply statements of the character of this paper, in all our journals. We shall be happy to publish several with each issue. The foregoing was taken from the *Alabama Planter*.

LINEN IN OLDEN TIMES.

THE following paragraph is taken from the *New-York State Agricultural Journal* for December last.

ANCIENT SPINNING WHEEL.—E. H. Pease, Esq., of this city, deposited in the Agricultural Rooms, a spinning-wheel, in good preservation, received from "Mrs. Elinor Fry," of East Greenwich, who gives the following interesting account of it:

"I will with pleasure give thee the history of the curious spinning-wheel, as far as I know. In 1754, the wheel came to my father's house, in East Greenwich, from Narraganset. Whether it originated in England or Ireland, I cannot say, but it had been in America near one hundred years when it was brought here. In 1777, I, Elinor Fry, spun on the said wheel one piece of lawn handkerchiefs, 12 in number, as good as those imported from England. The ladies here were emulous to excel, and were so patriotic, they chose the fabric of our country, and toiled with their own hands to spin lawn for their dresses, proclaiming independence of Great Britain; for some of us were so happy to have farms of our own to clothe us; and our fathers encouraged us to wear such as we made. The identical wheel spoken of, Samuel Fry,

my father, gave to me, and I, Elinor Fry, presented it to Erastus H. Pease, to hold or sell, as he pleases.

"In regard to the Spinning Party, it was done in 1789, to celebrate the Federal Constitution, and to encourage manufacturing in the State of Rhode Island. 21st of April, 1789, forty-eight patriotic ladies assembled at the court-house, in East Greenwich, with their own wheels, their own flax, and for their own use, spun 173 skeins of linen yarn in one day, from sun-rise to setting at night; one lady spun seven skeins and one knot, it being the most spun by any of the company; there were several that spun six skeins in the same time; the usual custom was two skeins in one day for each to spin. There was a festival in Providence, 1790, where there was a splendid ox roasted, called the Federal Ox. I was there at the time, and saw the ox while roasting. This may not be interesting to thee, so I will omit saying more on this subject. I herein sign my name, this 9th day of the 4th month, 1853.

ELINOR FRY."

LUMBERING IN MINNESOTA.

IT is well known that the extensive pineries along the Wisconsin, Chippewa, and St. Croix rivers, in Minnesota, are annually visited by troops of stout lumbermen, who spend the winter in chopping and hauling logs, which, in the spring, when the ice breaks up, are launched upon the turbulent waters, and floated down to a market. They ascend the river in batteaux, taking with them all their supplies for the winter. By dint of poling and pushing, they arrive at their destination about the 1st of November. Their first business is to build a cabin, say twenty by forty feet in size. The cabin is constructed of logs, daubed with mud inside and out, and covered with slabs of pine. A chimney is built in the middle of the room, a long table at one end, and bunks for the men are arranged on either side. We gather the following description of the wild and exciting, although laborious life of the lumberman, from an interesting article furnished by the correspondent of the New-York *Tribune:*

"Each man has his blankets and straw, if he can get it, and makes up his own bed, if it is made at all. A cook, usually a man, is employed. The oxen and teamsters arrive, hay is hauled in from the 'bottoms,' where it was cut the summer before, and our men are ready to commence the work in earnest. Two or three hands are set to chopping. The trees are cut down, cut off at the top and root, and thus hauled along; three or four hands go to 'swamping,' or clearing roads for the teams; one or two persons peel the bark from the trees, which enables us to pull it more easily; three or four act regularly as teamsters; a few extra hands to assist them whenever they are needed. Breakfast is prepared at an early hour. As soon as it is light in the morning, the hands are started off for work. The time to quit at night in the winter is at dark, but as the days lengthen in the spring, the men are allowed to leave off at sundown! Every man knows his place and business, and expects to keep 'up his end.' A good crew of men will put into the river from 5,000 to 8,000 logs in a winter. No where can a jollier set of men be found than these same woodsmen. During the long winter evenings, tales and songs, and jests and laughter, are heard in the rude cabin; and every man is expected to furnish his mite to make up the social repast. A good tale is considered 'none the worse for being twice told,' and songs are sung over

and over again. Whatever books are owned by individuals become common property, and are looked upon as a kind of free circulating library. It is not uncommon to have debates. At almost any hour of an evening, you will find the men, some standing, some sitting, some reclining, and all talking, laughing, reading, or singing, as though work and hardship were gone to return no more. Socially, there is no happier circle to be found than that which is formed about the chimney-fire in the rude log-cabin in the woods. The very soul of good-fellowship is there. They are glad to escape its *ennui* by going to work on Monday. The hours of Sunday are killed in many different ways. Those who are religiously inclined employ themselves in reading, writing, &c.; some are to be seen washing their clothes; a few are asleep, and others are off hunting. In the evening they retire at an early hour, and are up bright and early on Monday morning to begin their week's labor.

Thus passes the time till winter and snow are gone; then the work of the logs begins. The men keep the logs in the stream by poles, and often ride them in the stream for considerable distances. It is amusing to see 'green hands' attempt to ride logs; for they often tumble 'neck and ears' into the river, and swim, panting and frightened, to the shore. When the streams are shallow, large booms are built into them to draw up the water, so that the logs can be got to the mills. About the end of June, the logs arrive at the mills, when they are rapidly sawed, and rafted down the river.

Common hands in woods at present receive from $25 to $30 per month; teamsters, $50 to $60. Men on the 'drive,' as it is called, get $2 and $2.50 per day, Sundays included."

ELECTRIC TIME-BALL.

While the attention of the public is directed to the convenience of a time-ball on the State House, a similar apparatus has been put in operation in Edinburgh. The utility of the Greenwich ball to the ship-masters in the Thames led to the erection of a ball in the Strand, for the convenience of London mercantile houses. The raising and lowering of flags on public buildings, where legislative bodies assemble, marking the commencement and close of each day's session, have long been a convenience to many in the neighborhood of such edifices. The ball on the Observatory, at Washington, is relied upon by great numbers to regulate their time-pieces.

We copy from the *Illustrated London News* the following:

"An electric time-ball has recently been erected on the top of the Nelson Monument, on Calton Hill, Edinburgh, and is now in operation. The ball rises about five minutes to one o'clock, P.M., and falls at the hour. It is placed under the charge of Prof. Piozzt Smyth, the Astronomer Royal at the Observatory.

If the public look to the Monument at five minutes before one o'clock, P.M., Greenwich time, (now Edinburgh time also,) they will see the ball raised half-mast high; at two minutes before, full-mast high, or in contact with the cross-bars; and when one o'clock, exact to a tenth of a second, it will fall—the instant to be observed being the commencement of the fall, as shown by the formation of a line of light between the ball and the bars. Those, who, on the Monument, have witnessed the fall of the ball, describe the effect as extremely interesting.

The huge mass is first of all seen rushing downward with terrific velocity, as if likely to carry all before it; when suddenly, at about three-fourths down, it is brought, by some invisible agent, almost to a stand-still; and then, with two or three slight movements up and down, it rests on its bed-block as quietly as if nothing had happened."

INFERENTIAL ANALYSES.

We have often spoken of the importance of knowing the condition of soils, and have recommended, under certain circumstances, a careful chemical analysis.

We have also described modes in which the general character of the soil may be ascertained, without these expensive processes. Thus, we have referred in this connection to the character of the spontaneous growth of the soil, that is, the variety of the weeds which infest it; and we have explained a mode of ascertaining the presence of various elements by washing the soil, &c.

Reference has also been made to the character of the crops it has produced, as a fact of great importance in deciding in what elements it must now be deficient. We purpose a few additional suggestions, with some minuteness of detail, as to the use to be made of such facts.

We must, however, in this case, as in former ones, bear constantly in mind that the original condition of the soil will often, in respect to one or more of these elements, essentially modify and change the result at which we would arrive. On a "silicious soil," for example, it is impossible to exhaust the silex by any growth that can be cultivated. This element forms so large a portion of the whole body of "earth," in many cases, that to exhaust that element would be to use up entire "solid" feet of earth, leaving a void obvious to the sight, and changing the whole appearance of the field. On the other hand, clays are often, and, indeed, usually furnished so sparingly with silex, that it must be furnished from abroad, while the alumina is practically inexhaustible. A mere glance at some table like that exhibited on pages 24 and 100 of our numbers for July and August, vol. 5, will indicate what those elements are, in the soil in question, which may always be presumed to be present.

It obviously follows from these suggestions, that any specific instruction as to the probable absence of given elements, after certain oft-repeated crops are removed from it, must be taken as applicable to soils that are originally alike abundant in all required elements; and, at the same time, it is obvious that in fact, there is a small number of elements that seldom are found in excess; and repeated croppings, which make large demands on those elements, will leave the soil practically destitute of them.

One further remark, by way of limitation or explanation, is of paramount importance. Any element, silex, or almost any thing else, may exist in large quantities, but in an insoluble form. To dissolve silex to a very limited extent, it is now ascertained, water only is necessary; but to obtain it in solution to the extent often required, it is necessary to supply some other solvent. Here, of course, there is more necessity of science, than in any other department of the subject.

We are thus prepared the better to appreciate the following suggestions:

If we examine the straw of wheat, we find it composed of common vege-

table matter—oxygen, hydrogen, and carbon, with a small quantity of carbonate of lime; so, if we examine the constituents of the grain, we find them distinguished into starch and gluten; the elements of the starch are the same with those of common vegetable matters; but the elements of gluten are analogous to those of animals, or in addition to oxygen, hydrogen, and carbon, there is also nitrogen. The production of this nitrogen cannot be effected by common vegetable matter, and the manure employed in the production of the straw and starch cannot produce the gluten. That the gluten of wheat-flour may always be present, it is necessary that a quantity of animal substance should exist in the manure to be applied to the wheat crop. If we pursue our investigations a step farther, we find that phosphate of lime is as constant a constituent of wheat as gluten. In barley, instead of phosphate of lime, there is a small quantity of either nitrate of soda or nitrate of potassa, (saltpetre;) whence those salts should be present in the soil where barley is to be grown. The ashes of bean-straw always yield a large quantity of a carbonate of potash. A considerable quantity of superoxalate of lime in the pea crop has been discovered. Clover contains a notable quantity of gypsum, &c., &c.

Wheat, oats, barley, and other cereals, make large drafts on the phosphoric acid and the potash, soda, and magnesia of the soil. Hence, if repeated crops of either of these grains are taken from it, these elements must be supplied in the manure, or the land will become barren.

The following table shows the actual and comparative demands which certain crops make upon lime:

20	bushels of	wheat consume	13	lbs.
40	"	barley "	17	"
50	"	oats "	22	"
20	tons	turnips "	118	"
8	"	potatoes "	40	"
2	"	red clover "	77	"

Hence, it is obvious that when these and like crops are grown, in successive seasons, lime must be supplied from abroad.

There is an important fact, by the way, in reference to lime, which it becomes us here to notice. It is found that in process of time, lime sinks into the earth, and must be brought to the surface by deep ploughing. This effect is occasioned by the rains and melting snows, in which it is dissolved, which are absorbed by the earth, and which carry the lime, in a state of solution, along with them into the sub-soil.

If a soil is overlimed, it will not produce good crops, though even then, turnips and barley thrive well upon it. But if guano or the superphosphates are supplied too liberally, turnips acquire a very large size at the expense of quality. They are then liable to early decay. This arises from the fact that they contain an excess of water. Turnips are cultivated more successfully in a light than in a strong soil.

THE GREAT EXHIBITION.

INSTEAD of continuing the plan adopted in previous numbers, except the last, we shall make our sketches of this great collection, hereafter, rather by *topics*, or classes, than with reference to their position. We do this, because we suppose that few will hereafter visit the palace, under circumstances which require such a guide as we then proposed to furnish, while a better idea of the actual condition of the several departments may be obtained by the course now to be pursued. We begin by a short account of light-houses, and—

THE FRESNEL LIGHT.

The Fresnel Light is constructed upon the exact principles of optics. The reflectors are so arranged in connection with them, that few rays are lost by spreading themselves over a large surface, thereby of necessity appearing very dim, or by taking an upward or downward direction where they would be useless. So perfect is this arrangement of curved reflectors, that a single lamp is quite as effective as the many employed in the old methods. At the same time, such a direction is given to them parallel to the surface of the ocean, as the condition of things at each station may require.

These reflectors are placed about the sides of the revolving lantern, the entire section of the tower which forms the lantern being made to revolve by appropriate machinery. This revolving lantern is formed almost exclusively of glass. The original invention contemplated cut-glass prisms for their reflectors, but our own artists have already contrived a good substitute., very much cheaper, by prisms of pressed glass, of the requisite curve. These prisms being located at intervals around the lantern, a stationary observer would see the excessively brilliant beam of rays at short intervals, as one reflector after another comes into the line of his vision, while, in fact, this beam sweeps the entire horizon, or rather a succession of them constantly traverses the horizon, as if searching for some object requiring its assistance.

The light exhibited in the Crystal Palace was designed, we understand, to be set up at Cape May. One or two others had previously been in use in this country, but they were of the original early pattern—before Fresnel and his brother had perfected this invention. The difference between it and those at present used in France, is very great. In that model, Fresnel employed only prisms with straight sides; he had no apparatus for making any other; they were put together in small pieces; the light was obstructed by the cement used to confine them in their places, and the stray beams of light which escaped through the space between the prisms were caught upon mirrors, and reflected in the desired direction. But, in the new Fresnel lights, the mirrors are laid aside as no longer necessary; the prisms have taken a curved shape; they are larger and less numerous, and the sphere of glass which they form, enclosing the lamp, is of a far simpler and more solid construction, and a more perfect transparency.

The lamp of the Fresnel Light consists of four concentric wicks, of the argand pattern, each having, of course, a current of air on both sides of it, for promoting combustion, with its separate frame or rack for regulating its height. The oil is supplied by a pump, after the manner of the mechanical lamp.

GLASS-WARE.

Glass, as most of our readers know, is composed of silex, clay, and an alkali. Its first discovery, it is said, was an accident, resulting from the melting into a transparent mass, a handful of clay and silex, mingled with the ashes of a watchman's fire on the sea-shore. Chemically considered, this process is analogous, to some extent, to the manufacture of soap. No two of the three elements, which form either of these compounds, will unite by themselves, but the three together are necessary, and the philosophy of this action no wise man has yet attempted to describe.

The various kinds of glass are produced by the use of substances differing in fineness, purity, &c., as the presence of other metallic substances modifies the appearance and the essential qualities of the glass. Hence, the selection of the materials is a matter of very great importance. We have seen, for example, in Southern Vermont, in the town of Westminster, a "ledge" of rock, which was exceedingly free from all impurities, of perfect whiteness, and easily reduced to a fine powder. This, of course, is of great value, in this manufacture.

Among the exhibitions of glass-ware are elegant specimens from France and from the German States, from Austria, and the United States. Many of the articles from abroad are colored, but of these we shall speak presently. Some of the specimens which are not colored are exceedingly beautiful. Austria and France send not only the usual forms of household utensils, but beautiful lenses, for optical instruments, of numerous sizes and various focal distances. We notice also the rough material unground, or in the form of a very short cylinder. The collection of M. La Hoche, now removed, was very beautiful. M. Maez, of Clichy, near Paris, in the gallery at the end of the western nave, (Sixth avenue), has a beautiful display of glass-ware, colored and uncolored. His assortment of paper-weights is the largest and most beautiful we have ever seen.

But our own artists, in most respects, are not far behind the European. The goods shown by the New-England Company who manufacture at Sandwich, Mass., and by the Company at Brooklyn, N. Y., are very handsome. In the quality of the glass, and in the beauty of form, we have recently made very great progress. He must be very difficult who cannot suit himself from these establishments.

Colored Glass.—But in coloring, the foreign ("Bohemian") ware still bears the palm without a rival. Our own establishments produce colored wares in great variety, but they are not so clear and so brilliant as those they imitate. The combination of several colors in one specimen may be seen in the collection of M. Maez. This is done by a simple process. The specimen is first formed in glass of natural color. It is then dipped in a melted mass of colored glass, and immediately withdrawn. The surface is thus covered by a thin coating of this colored mixture. The specimen, after cooling, is then shaped and ground, and the "cut" parts will of course display an uncolored surface.

The substances used in coloring glass are gold, copper, cobalt, manganese, iron, &c. The oxide of gold gives the rose and ruby tints, uranium that of the topaz, copper an emerald green, &c.

The New-England Company exhibits specimens of peculiar appearance. They resemble, *in tint*, surfaces of silver, as if of pure metal, with a glass lustre.

This is done as follows:

The glass is double, and the space between the double surfaces is filled with a solution of silvering preparation, which is then reduced to pure silver by the addition of a solution of grape sugar. The liquid matter is then poured off, and the vessel is sealed.

American Glasses.—The manufacture of glass in this country was undertaken about the beginning of this century, near Fredericktown, Md., by German artists. That establishment was broken up, and the workmen were scattered. Some of them were employed by Colonel James O'Hara, of Pittsburgh, in the first window-glass establishment in this country. Such was the commencement of this manufacture in the United States. At the present time, similar establishments are numerous.

Part of the workmen who had been employed in Maryland, who went to Pittsburgh, established a flint-glass manufactory upon the premises now occupied by Bakewell & Tears. But they were unsuccessful, and the whole concern was sold, and passed into other hands. The expenses of freight of the rough material were excessive, the pearlash and red-lead being brought from Philadelphia, and the clay from Burlington, N. J., and all was transported in wagons. For several years, the saltpetre was obtained from the caves of Kentucky, but afterwards was imported from Calcutta.

Still other embarrassments were encountered, as, in some other kinds of manufacture, these foreign artists refused to allow apprentices to be taught, and having the whole power in their hands, they used it without any regard to the interests of their employers. We have become acquainted with similar conduct on the part of foreign artists in more recent times. Indeed, we are not sure that at this day, there is not an establishment at Thompsonville, Ct., into which native citizens are not allowed to enter, even to examine the goods produced, while the idea of teaching American apprentices is, or very lately was, utterly discarded. Indeed, the presence of the agent of the Company himself was looked upon as rather suspicious. Perhaps a similar state of things might be found elsewhere in the States. But in the case before us, the owners ventured to resort to England, in spite of their severe laws, regulating, or rather prohibiting, the departure of their mechanics for other countries, and thus means were provided for carrying on the business successfully.

More recently, similar establishments have been set in operation, in Pittsburgh, Wheeling, Wellsville, Steubenville, Cincinnati, &c.

Since this manufacture was commenced in this country, a very great improvement has been introduced, which has quite revolutionized the whole system. Our readers are aware that the more elegant and costly specimens of glass-ware are what is called "cut glass," though we suppose the term less appropriate than are most technical terms which are used in the arts. This process, much of which might be termed "grinding," is slow, and of course costly. Our own artists have contrived to avoid this expense. When glass is melted, or reduced to the condition of a liquid, it is exceedingly ductile. The visitors at our museums and similar exhibitions have witnessed the feat of making glass birds, ships, and toys of all descriptions. Availing themselves of this ductility, moulds were contrived, so that by pressure, any desired form might be secured. By various improvements in the machinery employed in this service, the quality of the work has been so improved, that a practised eye is necessary to detect the difference between the cut and the pressed glass. The cost of these wares has, by these means, been so much reduced, that their consumption has increased some ten-fold; and more flint glass is now manufactured in this country than in England.

The materials used in these processes, are now obtained extensively in this country. We are told by Mr. Jarvis, of the New-England Glass Company, that the materials annually consumed in the manufacture, not including the manufacture of window-glass, are nearly as follows:

Coal for fuel, - - -	48,000 tons.
Silex, - - - -	6,500 "
Ash, nitre, &c., - - -	2,500 "
Lead, - - - -	3,800 "

STEAM-CARRIAGE.

Among the recent additions to the Exhibition, is a steam-carriage, invented by Mr. J. K. Fisher, and built under his direction, at the Vulcan Iron Works, in Utica. We have, a year ago, spoken of the plan of this carriage, and expressed our confidence in its ultimate success. An examination of it in its present state—complete as to its working parts—confirms our belief; and its actual performance is such as to dispel all doubts upon several important points, if not to settle at once the question of its general economy. It is to remain in the Exhibition until the weather and the roads become such, that it may be run to some place of recreation, for profit; and in the meantime, the inventor wishes to make arrangements to manufacture and introduce carriages of a large size for passengers, offering, as a first condition, to show, by his carriage, that they will work at less expense than horses, at all rates of speed above six miles per hour.

The length of this carriage is thirteen feet; the width, five and a half feet; the height, when covered, will be about six and a half feet. The floor of it is seven inches from the ground; but the inventor considers that this is too low, except for the best roads, and in future the height will be from twelve to fifteen inches. The size is therefore about that of a common private carriage without its horses.

The steering and turning are effected by a new apparatus, which is more simple than any hitherto used. The steering-wheels are firmly jointed to the axle, one being keyed fast to it, the other turning tightly when going round curves. The axle revolves with the wheels when going straight forward. The advantage of this is that the wheels will never become loose and rickety upon the axle, and will always stand upright and firm—a condition necessary to enable them to work well under the lateral strain to which they are exposed in slipping one of the driving-wheels when turning a corner. The joint which connects the steering-axle to the body of the carriage is very low, so that the strain is in a direction not so far from horizontal as to render the steering-wheels liable to overturn, although they are but eighteen inches apart; this small distance between them is adopted, because it makes it easier for the conductor to turn them than it would be if they were wider apart. The axle works in a slot, in an upright spindle, which is jointed to the ends of two springs, the one of which is directly over the other, at a height of about two feet above it; and to the top of the spindle is fixed a lever, which goes backward into the carriage, by which the steersman can guide the vehicle, without being exposed to the weather.

It may seem that the arrangement here described, of keying the driving-wheels firmly to the axle, and forcing them to slip when turning, is so obviously the best that no credit is due for it. But it was the general opinion of the English inventors that it was necessary to have one wheel loose when turning to the right, and the other loose when turning to the left, if a short

turn was to be made; and it was their practice to run with one wheel loose, except when ascending a hill; and to attach and detach the wheels, it was necessary for a man to dismount. This opinion arose from actual failures to turn when both wheels were attached. But these failures resulted from a bad distribution of weight: the driving-wheels were wide apart, and the steering-wheels were not far enough forward; an arrangement that probably arose from an anxiety to make the carriage occupy little room in the street. There is, therefore, due to this simplification, the credit of unlearning what is false, and thus liberating the invention from an expensive and troublesome clog.

The *suspension* of the body is new. From two boxes, close to the hubs and the hind-wheels, a pair of springs descend, and are connected to the bottom of the carriage, about twenty inches below the axle. Under the fore part of the body, in the middle, is a spring, half of it projecting forward beyond the body, being jointed at the back and the middle to the body, and at the fore end to the steering spindle; and over this is another spring, projecting the same distance, which is jointed to the upper part of the spindle. These forward springs cannot be bent literally, but are flexible upward and downward; and they thus afford a connection of the wheels with the carriage, which is sufficiently firm in the lateral direction for the purpose of steering, and which allows whatever play of springs may be required for ease and security against jolting.

The *connections*, as they are termed in locomotives, are effected in a novel way. The axle, it is evident, should be so connected to the carriage, that the engines cannot move it backward and forward, nor upward and downward. This is a point of the utmost importance; as it is necessary, for the durability of the machinery, as well as for the comfort of the passengers that the springs should be of the most yielding and elastic kind; and it has been found, especially when the cranks are outside the wheels, that the carriage is rocked and shaken by the oblique direction in which the force is applied during a portion of the stroke, the sides of the carriage being lifted alternately as the cranks attain the vertical position, and allowed to fall as they attain the horizontal position. This rocking is entirely prevented by a new connection, which we will endeavor to describe.

The driving-axle is attached to the body by three radius rods; two of them, parallel to the sides, connect the ends of the axle to the body, and receive the strain of the engine; the other is parallel to the axle, jointed at one end to the box that bears the weight, and at the other, to the body of the carriage, allowing free motion up and down, but checking lateral motion. All the joints of these rods are equivalent to universal joints. A slender shaft turns in the joints by which the pair of radius rods are attached. Upon this shaft are two cranks; and upon the driving-axle are two cranks of the same length, but much stouter. The ends of these cranks are coupled by a parallel rod of the same length as the radius rod, working like the parallel rods that couple the wheels of locomotives. The connecting rod is jointed to the parallel rod. When the piston is at the middle of its stroke, there is an upward strain of one end of the connecting rod, tending to lift the guides, with a force of about a fifth of the whole pressure upon the piston; but this strain is balanced by an equal downward pressure upon the small crank, which turns in a bearing fixed to the body; hence, there is no tendency to rock the carriage. There is, however, a slight motion of the fore end of the carriage upward, and the hind end downward, but far less than that of a gig, and not enough to be injurious or unpleasant.

The engines being outside the wheels, room is allowed for the boiler to be low down, and also for the seats to be low; so that the vehicle is not top-heavy, nor liable to overturn; and the motion is less jolting, in consequence of the body *hanging* from the axle, instead of being perched above it, as would be the case if the cranks were near the middle of the axle. Besides, the machinery is more accessible; and the liability to break is much less than if the axle were cranked. These advantages, we think, will always secure a preference to the outside connections, thus improved, as to steadiness. And we think that the connection by gearing-chains, bands, and toothed wheels, which were used in some carriages, cannot be regarded as worthy to be used in competition with these rods.

The valves for the distribution of steam are so arranged, that a back pressure of any required force may be used to retard, stop, or run backward, so that no brakes are required. Most of the early English carriages used breaks, drags, and other means of regulating the speed down-hill; but they threw them aside, finding the steam much more efficient and convenient.

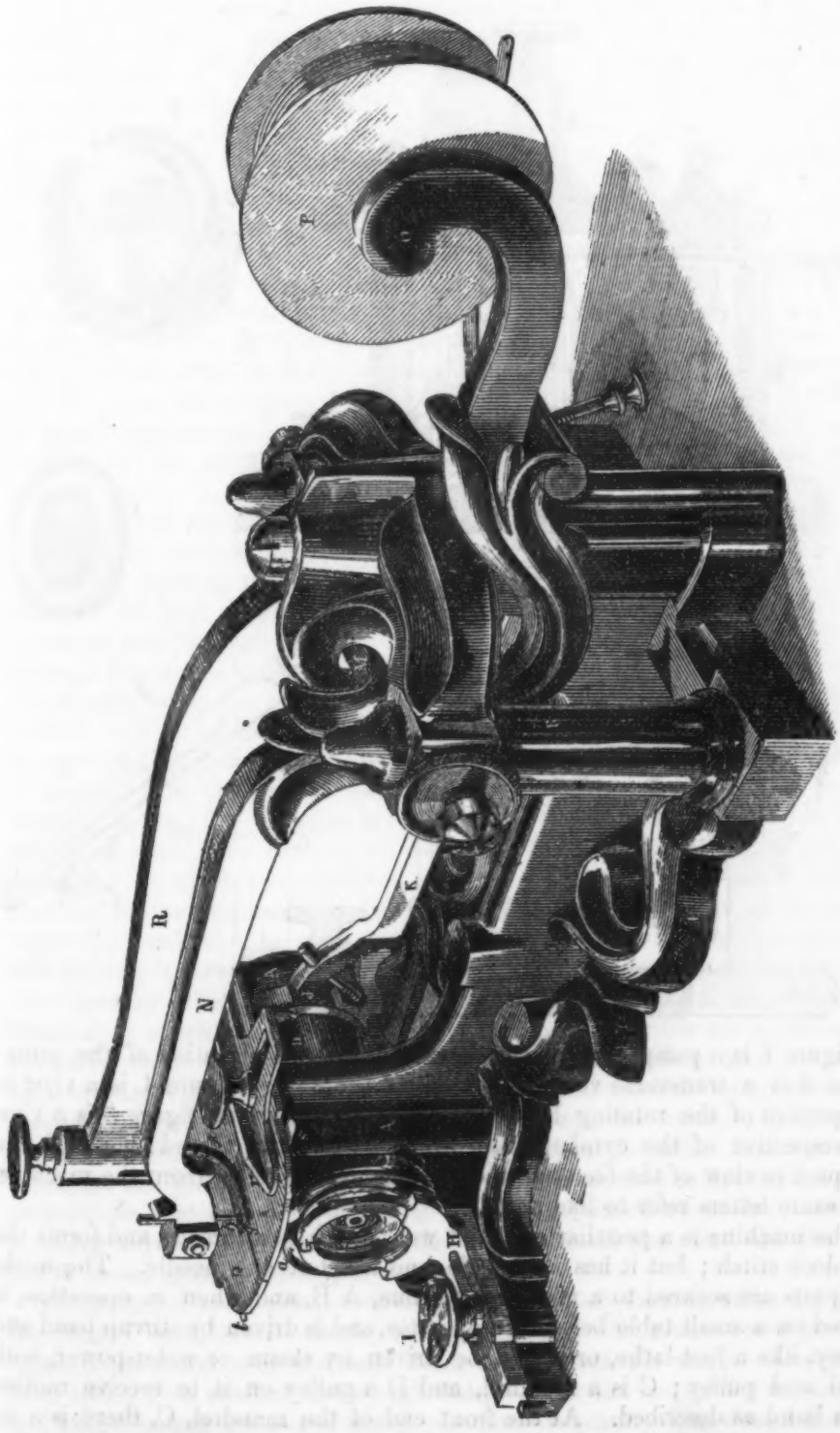
We may here remark that the history of the steam-carriage shows that some of the most important improvements in it have consisted in disencumbering it of unnecessary apparatus. Soon after its first invention, and in consequence of a carriage with a single engine slipping its wheels, it became loaded with propellers, gearing connections, breaks, and other ricketty and useless appliances, the last of which, perhaps, have now been exploded by Mr. Fisher; but we will not say that more may not be spared. However, the simplicity attained is such as to give an appearance of durability and economy; and yet all that has heretofore been attained by complex means, is attained without them. The steering, stopping, and other operations, are effected with certainty and precision.

The cost of a steam-drag, or drawing carriage, of the largest size that plank-roads will bear without injury, say two tons' weight, will probably be within twenty-five hundred dollars, and the annual repairs within a fifth of the original cost.

RAILWAY SIGNAL.

A VERY ingenious contrivance is exhibited by Dr. Clayton of Virginia, invented by himself, for giving signals upon railways. The approach or departure of a train may, by means of it, be made known, with scarce a possibility of mistake, while the machinery is in working order. This invention consists of a set of signals at the top of poles, say three or more, placed on the same connection, (which is of wire,) two miles in length, with a lever at each end. The one at the end first entered by the train is an upright one, so that, as the engine passes over it, it is pressed forward far enough for the train to pass, and draws the connecting wire, by which means all three of the signals are set, discernible at any distance, at the same time elevating a rule-pointed lever at the other end, for depressing the signals. The train runs the two miles with the signals up in advance, and then, in passing the lever at the other end of the connection, it is pressed down by the engine, which depresses all the signals, setting them down behind the train. Again, a signal is up behind the train always, to guard it from being run on from behind, thus preventing concussions. For safety at bridges, it is only necessary to set the levers at the draw, and every time the draw rises, the signals will go up a mile each way; and when the bridge lowers, the signals fall.

WILSON'S IMPROVED PATENT SEWING-MACHINE.



THE annexed engravings are views of the celebrated sewing-machine, invented by A. B. Wilson, of the firm of Wheeler, Wilson & Co., and for which a patent was granted on the 15th of June, 1852. Mr. Wilson had

invented and received patents for previous sewing-machines, but this is a manifest improvement over all others.

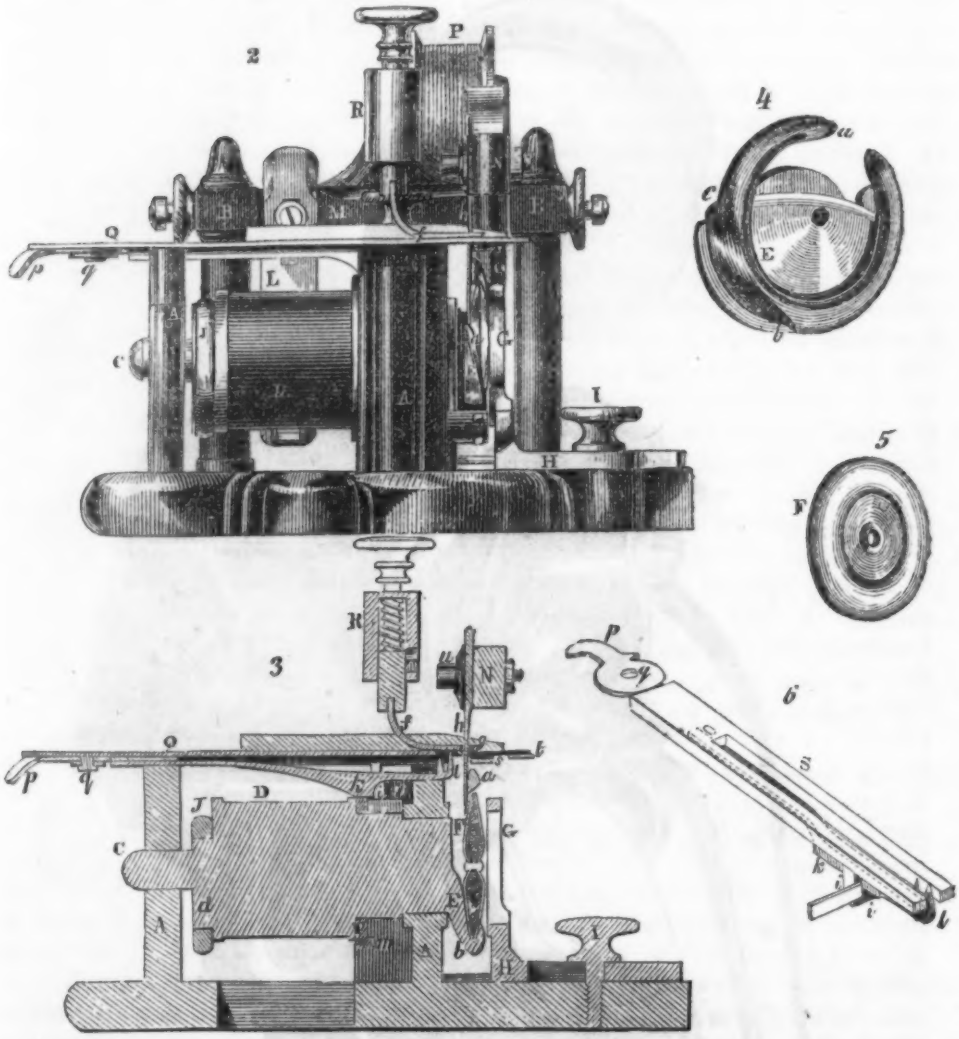


Figure 1 is a perspective view; figure 2 is an end elevation of the same; figure 3 is a transverse vertical section of the same; figure 4 is a view in perspective of the rotating hook which opens the loops; figure 5 is a view in perspective of the cymbal spool which carries the thread; figure 6 is a perspective view of the feed-bar and appendages detached from the machine. The same letters refer to like parts.

The machine is a peculiar one, and works with two threads, and forms the firm-lock stitch; but it has no shuttle, and has but one needle. The working parts are secured to a neat small frame, A B, and when in operation, is placed on a small table before the operator, and is driven by stirrup-band and pulley, like a foot-lathe, or it can be driven by steam or water-power, with band and pulley; C is a mandrel, and D a pulley on it to receive motion by a band as described. At the front end of the mandrel, C, there is a rotating cam plate-hook, E, (best seen in figure 4,) on it; this rotating cam-hook is of a peculiar form; it is concave on its face, and has portions of two threads of a screw formed on its periphery; a portion of the periphery is also

cut away to form the hook, *a*, which opens the loop in the needle thread. One part of the front or outer thread of the screw is chamfered off at *b*, to the back or inner thread, and the notch, *c*, between the portions of the screw threads, is made to extend back from the hook, *a*, about one third of the circumference. Within the concavity in the face of the hook, plate E, there is a hollow quoit-formed bobbin, F, which carries a thread to be passed through the loop formed by the needle-thread when it has passed through the cloth, so as to form the lock or true binding stitch. This peculiar bobbin is held by a ring, G, attached to a rod, H, which is adjusted by a screw, I, secured in the frame; this ring keeps the bobbin in its place, but allows it to turn freely. One part, *d*, of the mandrel is turned eccentrically, and is encircled by a ring, J, to which a rod, K, is attached, which connects to an arm, L, and is secured to the arbor, M, which is fitted in bearings in the standards, B B, of the frame, and forms the fulcrum of a two-armed lever, one of whose arms, N, is the needle-arm, and to the other, O, is secured the spindle, upon which is hung the spool or bobbin, P, which carries the thread for supplying the needle and forming the loops. By the revolution of the mandrel, C, the eccentric *d*, is caused to give a vibratory movement to the lever, N O.

The cloth or material to be sewn is laid upon a plate, Q, which is secured to the top of the standards, A A, and forms a small table. It is held down by a small pressing plate, *f*, which is attached to the end of an arm, R, secured to the back of the standards, B B, and extending over the top of the needle to pass through; and an opening corresponding to the notch, *g*, is cut through the plate, Q, for the same purpose; N is the vibrating arm which carries and works the needle, *h*; the hook, *a*, rotates and passes as close as possible in front of the needle; the movements of the hook and needle are so regulated, that the hook passes the needle just as the latter is commencing its ascent. The cloth is fed forward to the needle by means of a peculiar feed-bar, S, (fig. 6.) This bar is straight and flat, with a slot nearly its whole length, and with two ears, *i i*, on its under side; under the slot, is secured a spring-bar, *k*, which has a pointed tooth, *l*, at the end. The bar, S, slides in mortices in the standards, A, below the plate, Q. The point of tooth, *l*, is below the small slot in plate, Q, and passes through it, catching the cloth, and moving it forward a short distance for a stitch, then dropping down to take another stitch. This action, it performs by a cam, T, (fig. 3,) on the mandrel, C, which has a projection on it, that presses on the spring under bar, *k*, and forces up the tooth, *l*, while at the same time its front part acts on the back of ears, *i i*, and moves the feed-bar forward towards the plane of the needle's motion. When the cam, T, ceases to act, the tooth, *l*, that catches and carries the cloth, drops down, and the feed-bar is pushed back for a new stitch, by the pressure of the spring, *n*, which is secured to one of the standards on the ears, *i i*. The length of stitch is regulated by an eccentric stop, *p*, which is pivoted on a pin, *q*, to the under side of the plate, Q; the feed-bar is forced against the stop by spring, *n*.

The material to be sewed is placed on the top of plate, Q, under the pressing-plate, *f*, and close up to the upturned part, *r*, which serves as a gauge to regulate the distance of the seam from the edge of the cloth. The thread from spool, P, is conducted through hole, *u*, near the end of the needle arm, and then through the eye of the needle near its point. The thread from the hollow plate bobbin, F, is passed through a slit between a small spring, *s*, and the edge of plate, Q, to the opening through which the needle passes; in this opening it plays freely. Its end is passed under a spring, *t*, which holds

it, and the end of the thread from the needle is held by the attendant, and all is then ready to commence work.

When the mandrel is rotated, the descent of the needle-arm forces the needle through the cloth, which carries the thread with it—the thread lying close to the needle behind and in front of it. When the needle commences to return or rise, the cloth offers a slight resistance to the return thread, which forms an opening; the rotating hook, *a*, comes round and catches it, carries it forward, and forms a loop. As the rotation of the hook continues, it enlarges the loop, and that part of it which is on the front side of the hook, is drawn between the bobbin and the concave face of E, while that part of the loop behind the hook passes into the notch, *c*. The loop being extended by the rotation of the hook, the plate bobbin, F, in the concave of E, passes through it, and on the next descent of the needle, the loop is slipped over the chamfered part, *b*, of E, and drawn over the front of bobbin, F, between it and ring, G, and thus it will be understood, that as soon as one side of the loop passes on one side of the bobbin, and the other on the opposite side, the bobbin passes through it, and on its being drawn tight, it locks the thread of the needle. Every second stitch is commenced before the previous one is completed, the extension of the loop for the second stitch drawing the first tight, and thus every stitch must be alike—not one slack and one tight as in some machines. The form of the rotating hook causes it to perform three beautiful and ingenious operations, namely, forming and throwing off a loop, and drawing the preceeding one tight at the same time. While the needle is operated, the cloth is regularly fed forward by the feed-bar described. There is a brake spring applied to the spool, P, to give the needle-thread its proper tension; and a piece of leather, applied to ring, G, produces the proper tension on the threads of the loops. The needle-arm has a vibratory motion, and the length of needle stroke can be increased or diminished by a screw.

This machine is exceedingly neat and portable; it performs the finest quality of stitching, such as collars and shirt-bosoms. One girl can stitch with one machine, thirty-five dozen of shirt-collars in one day. There are 1500 of them now in operation in various parts of the country, and the work which they perform cannot be surpassed. They can sew straight and curved seams; the stitches do not rip out, and from 1000 to 1500 stitches can be made in one minute by a good operator. One machine, all complete, occupies no more room than a small work-table, and it is as ornamental as useful.

Messrs. Wheeler, Wilson & Co., have their office at No. 265 Broadway, this city, where these machines can always be seen in operation, and to see them is to admire their ingenuity of construction and excellence of action. Every machine is made under the eye of the inventor, at the Company's machine shop, Watertown, Conn., so that every one is warranted. As there has been much dispute about the originality and identity of sewing-machines, as related to Mr. Howe's original patent, no person who buys one of these machines is clogged with an impending prospective law-suit, as there is an arrangement and perfect agreement between Mr. Howe and Messrs. Wheeler, Wilson & Co.; so every customer will be perfectly protected. These machines are adapted to sew fine and coarse work, leather, canvas bags, men's clothes, or the finest collar stitching.

For further particulars, address, or call at the office of the Company.

See also their advertisements.

WADSWORTH'S MEASURING MACHINE.

An apparatus capable of determining the one-millionth part of an inch, may be viewed in the English department of the New-York Exhibition.

The use of such an instrument is chiefly for copying or regulating the standards of weights and measures, and in the construction of delicate philosophical instruments. The principle of this curious contrivance will be readily understood from a brief description. Two steel bars are placed in a cast-iron block, and are made to approach or recede from each other by means of screws moving accurately in their axes. The screw which moves one of the bars (the other being supposed stationary for the simplicity of the explanation) has twenty threads to the inch. On the head of this screw is a wheel with two hundred teeth. Hence a motion of one space on the wheel would advance the bar 1-4000 of an inch. An endless screw, which moves the wheel, has upon it a circle graduated with 250 divisions. One division of the graduated circle will therefore correspond with 1-250th of one of the wheel divisions, or to an advance of the bar of ($1\text{-}250 \times 1\text{-}4000$) one millionth of an inch.

PORTFOLIOS, PORTMONNAIES, &c.

There are several cases in the Crystal Palace in which these goods are exhibited, but among them all we have noticed none superior, if equal, to those of Messrs. Zunn & Ranftle, whose sales-room is at 14 John street. They are well made and of good material. The elegance of these goods led us to make a visit at the rooms of these gentlemen, and we were not disappointed at the appearance of their stock. All their goods are well made, some are very handsome, while their prices are very reasonable. Go and see them.

HARRIS' PATENT PORTABLE CIRCULAR SAW MACHINE.

A large and heavy wheel, perhaps three feet in diameter, is suspended by its axis upon a strong frame. A circular saw is fastened upon another axis, so placed above the former, that its surface rests upon the flat face of the periphery of the large wheel. The motion of this, whether by hand power, applied to a crank, or by a treadle worked by the foot, or by other motive power, by the surface-adhesion referred to, gives motion to the saw. But this is not all. As different degrees of adhesion may be required for different kinds of work, the axis of the circular saw is inserted in a movable centre or box, which is regulated by a screw and spiral spring. It is a cheap and very convenient arrangement.

HARRIS' PATENT RECIPROCATING STEAM-ENGINE.

The novelty and improvement of the invention consists in the mode of communication between the cranks, shaft, and the cross-head, or lever-beam. In the ordinary mode of producing a continuous revolving motion from a reciprocal one, a single crank and one connecting rod are used: the effect of which is an unequal leverage at different positions of the machinery. To counteract the effect of this, a heavy fly-wheel is added, which diminishes the effective power of the engine. The use of two cranks placed at right angles with each other, connected by means of rods to the ends of an oscillating lever, whose fulcrum is a pin attached to, and travelling with, the cross-head, avoids this evil. "When attached to beam engines, the lever should be connected at the end of the beam. At the commencement of the stroke,

the crank-pins stand at equal distances above and below the central line drawn between the cylinder and crank-shaft; consequently no motion can ensue, and the cranks are on the dead points. Now if the shaft be turned in either direction, on the admission of steam to the cylinder, the majority of the power will be communicated to the crank which has the greatest leverage, and the shaft will revolve in that direction. When the cranks have made a quarter revolution, the leverage is nearly equal on both, and the piston has travelled over one half its stroke; on continuing the revolution the crank which at the commencement had the greatest leverage now has the least, the majority of the power being transferred to the other, which continues to the end of the stroke, when the cranks assume their other dead position.

The office of the oscillating lever is to equalize or average the combined effects of the cranks of the piston.

In this engine, the cylinder is one sixth shorter (or as 24 to 29) than that of the common engine with a crank of the same length, and turns the dead points independent of the piston which in a measure, checks its momentum, and thus avoids the pressure upon the journals and boxes, and consequent wear of both."

AGRICULTURE IN VIRGINIA—ADDRESS OF HON. WILLOUGHBY NEWTON.

We have received from Mr. Corbin, 1st Vice-President of the Rappahannock River Agricultural and Mechanical Society, a copy of the address delivered by Hon. Willoughby Newton, in November last. A union was formed, at that time, with this and the Fredericksburg Society.

The following officers were chosen: President, Edward T. Tayloe. Vice-Presidents, 1st, James P. Corbin; 2d, William Pollock; 3d, Richard Baylor; 4th, O. M. Crutchfield; 5th, Colonel H. T. Garnett; 6th, W. R. Mason. Recording Secretary, Major J. H. Kelley. Corresponding Secretary, John Taylor. Treasurer, R. G. R. Catlett. Agent and Collector, John W. Kidd. Executive Committee, Dr. Edmond P. White, John Seddon, Thomas F. Knox.

The address is able. It gives a historic sketch of several counties, with their more prominent citizens. Their condition, as to agriculture, is pronounced eminently progressive. The value of slave-labor is discussed, and is pronounced more economical than any other. He may be correct in this, but he does not appear to take into his account several particulars, which would necessarily be considered in a *general* change of this sort. The importance of cotton is next considered, which, he says, is "the autocrat of the world," and certainly its actual importance is not easily exaggerated. Reference is then made to certain agricultural improvements, and on this subject we extract the following pages, which we will entitle,

PERUVIAN GUANO IN VIRGINIA.

But by far the most remarkable improvements, which indeed seem almost the work of magic, have been made in the extensive barren and exhausted region known as "The Forest," and are to be attributed, almost exclusively, to the general use of Peruvian guano. A question of great interest here presents itself, Are these improvements real or illusive? Are we, with the improvidence of fraudulent bank directors, using up our capital in dividends, or in the spirit of a spendthrift, ruining our inheritance for the sake of large immediate profits? My own opinion, sustained by long experience and observation, and by the judgment of many intelligent and prudent farmers, is,

that no improvement is so immediate, and none so permanent, if a judicious rotation be observed, as that effected by guano. The farm of my residence, the first, I believe, in the State on which guano was used, affords in every part of it unmistakable evidence of this fact, not only by the increased product of grain, but in the clover and grasses that thickly cover it. A single detached acre affords a striking illustration in support of my opinion. During five years, it has produced three crops of wheat, one of clover, and one of corn. The wheat crops were dressed with guano; the first crop with one barrel of African, costing four dollars, the other two with less than 150 lbs. of Peruvian. The entire cost of the guano for the three crops was about eleven dollars. The corn received no manure except the droppings of the stock pastured on the lot the previous year. At the commencement of the operation, it would certainly not have produced more than five bushels of wheat. The crops of wheat were respectively 17, 22, and 21 bushels, the last crop being that of this year, after a yield of 40 bushels of corn.

I will not fatigue you with figures, but any gentleman can readily make the calculation himself, from which it is obvious that this acre has paid in cash, for a series of five years, a clear annual profit of six per cent. on a capital of not less than two hundred dollars. The lot, though cultivated one year out of turn, so far from being impoverished, exhibits every sign of great permanent improvement. It is proper to state that the surface is level, and the soil originally rather better than the average of the farm. I have been induced to examine this subject with some care, by the views expressed in the excellent address of Mr. Hallowell, before the Agricultural Society of Loudoun, sustained, as they are, by the communication in the *National Intelligencer*, signed L., published with the address, and which I attribute, without knowing the author, to the pen of Dr. Lee, a well-known agricultural editor and writer for the Patent Office Reports. I have not a word to say against the friendly and judicious counsels which they give against the improvident use of guano, accompanied by an exhausting tillage. So far from it, I highly approve and fully indorse them. But their views, though in the main correct, are liable to misconstruction, and have been very generally misunderstood by our farmers. Indeed, the views of L., adopted by Mr. H., are so strongly expressed, and without any qualification, as necessarily to lead to erroneous conclusions. I should regard our condition as hopeless, indeed, if it were true, as stated by him, that it "is in cities that both the study and the practice of good husbandry must begin, before they are possible in the country, as society is now formed." If our lands are destined to sure exhaustion, unless we can return to them, in addition to guano, all the bones, night-soil, and other offal now wasted in the cities, we had as well surrender at once in despair; for that, except in the immediate vicinity of the towns, is plainly impossible. Though very desirable, this is by no means indispensable to a very high degree of agricultural improvement. I will not repeat here views already presented to the public, as to the proper plan for renovating exhausted lands. I may say, however, that my confidence in the system is strengthened by every day's experience.

The opinions of these gentlemen are entitled to very great respect, and I would not question their correctness, if I were not satisfied that they tend to promote very erroneous impressions as to the value of the most active and extensively beneficial of all fertilizers. They state, what is not questioned, that all cultivated plants exhaust the alkalies in the soil; that potash and soda, in definite proportions, are necessary to the production of wheat, and ask, "How can the application of twelve pounds of potash and soda to an acre of wheat, producing twenty-five bushels, make good the loss of thirty-

six pounds of these ingredients, removed from the land in the crop?" Now, twenty-five bushels of wheat to the acre, is much more than is usually produced, and in our easily tilled lands, is greatly beyond a remunerating crop. But even supposing that to be the product, there is not the slightest reason to apprehend the exhaustion of the land, though no foreign material be used except the guano, and the small quantity of lime that may be used as an alterative, if a proper rotation be adopted, and the usual care practised in returning to the land the straw of the crops, and the putrescent manures raised in the ordinary course of farming. According to Mr. Hallowell, such a crop of wheat consumes of potash and soda thirty-two pounds, of which twelve pounds only are restored to the land in two hundred pounds of Peruvian guano. This statement corresponds nearly with the various analyses of different agricultural chemists, and may be regarded as correct. Of the thirty-two pounds of these elements consumed by the crop, more than two-thirds are in the straw, leaving less than ten pounds in the grain of the wheat, which is all that in the course of judicious husbandry is ever removed from the land. We have, thus, two pounds more than these alkalies in the guano, than necessary to supply the grain, even if twenty-five bushels were produced to the acre. Supposing twenty bushels to be produced, which is an exceedingly profitable yield, we should have in the guano four pounds of these alkalies in excess, for the benefit of future crops. In addition to this excessive supply of the alkalies, derived from the guano, we have a considerable quantity in clover, which contains a large per centage of potash, drawn by its tap roots from below the cultivated soil, and in the ashes from our houses and quarters, and in the saline air of the sea-coast, which, according to Dr. Higgins, the State Chemist of Maryland, contains a sufficient amount of soda to enable lands in the neighborhood of the bay and salt water rivers, almost destitute of these alkalies, to produce fine crops of wheat, the soda acting vicariously and supplying the place of potash. We may, therefore, banish all apprehensions on this subject, being taught by both science and experience, that guano is not only a most active manure, but, properly managed, a most efficient agent in the permanent improvement of our lands. The progress already made by the farmers of Eastern Virginia is most encouraging, yet we should not rest satisfied until we have effected much greater and more general improvement. We have still a wide and inviting field to be explored. Our labors have of late been principally devoted to the easily tilled and improvable lands of the "Forest," and to the alluvial lands of our rivers and creeks, already open to the plough. There are extensive tracts of the very finest lands yet in their virgin state in what are called the "Necks," that have been in a great measure cleared of their heavy timber, and now only wait the employment of skill, capital, and labor, to render them most valuable and productive. Lime, draining, and persevering energy, would, in a few years, convert these now waste lands into the most beautiful and profitable farms. Lands similar to these, on the Eastern Shore of Maryland, have in a few years been reclaimed, and raised in value from $5 or $10 to $50 and $60 an acre, which they now readily command. The State Chemist in Maryland has, in his first report, given very accurate descriptions of these soils, and offered many useful suggestions for their improvement. I cannot too earnestly urge you to enter on this field of labor. The wealth acquired from the increased profits of agriculture cannot be better invested than in their cultivation. It would, by improving neighborhood roads, greatly facilitate social intercourse; health would be farther promoted, and this beautiful region rendered still more attractive, and millions added to the productive capital of Virginia.

STATISTICS OF COTTON.

THE *Alabama Planter* publishes the following table, showing the receipts, exports, and stocks of cotton at the times and places designated:

PORTS.	Stocks on hand on 1st September.		Receipts since 1st September.		Exported from 1st of September to Dates.										Stocks on hand and Shipboard.	
					Great Britain.		France.		Other Foreign Ports.		Total to Foreign Ports.		United States Ports.			
	1853	1852	1853	1852	1853	1852	1853	1852	1853	1852	1853	1852	1853	1852	1853	1852
New-Orleans,....Dec. 27	10,522	9,758	462,796	828,772	128,507	309,693	41,237	52,212	38,972	56,010	208,716	417,915	43,393	94,406	283,929	398,899
Mobile,.....Dec. 30	7,564	2,819	127,504	279,146	15,691	59,443	10,064	6,997	2,859	3,770	28,624	70,130	30,966	39,927	75,478	114,243
Savannah,.....Dec. 22	5,150	2,950	105,899	138,276	6,545	20,934		1,407	509	1,158	7,754	23,899	57,248	55,668	48,838	57,354
Charleston,.....Dec. 22	15,126	11,146	134,597	156,735	28,414	60,578	5,392	13,017	8,568	3,524	37,374	77,121	59,756	46,821	55,502	44,149
Florida,.....Dec. 19	523	451	31,650	39,366									8,580	13,015	24,127	26,773
Texas,.....Dec. 22	428	317	15,807	25,709		801	862		446	350	1,308	1,151	7,571	13,056	4,833	7,717
Virginia,.....Dec. 1	400	450	4,208	6,987									207	1,722	700	950
N. Carolina,.....Dec. 10	100	200	846	4,355									546	3,731	400	625
New-York,.....Dec. 20	67,675	45,796			62,250	46,948	3,917	9,478	8,097	4,687	74,304	60,507			23,122	20,096
Other ports,.....Dec. 17	20,100	14,200			2,996	1,842			114	121	3,090	1,983				
Total,.....	127,588	87,587	883,128	1414346	244,583	499,633	61,492	83,033	54,575	69,610	360,450	652,276	208,167	268,845	461,929	619,806
Total, 1852,.....	87,587		1414346		249,633		81,088		69,610		652,276		268,345		619,806	
Increase,.....	40,001		591,218		255,250		21,541		15,035		291,826		60,078		157,877	
Decrease,.....																

☞ We have deducted from New-Orleans the receipts from Mobile and Florida; from Charleston the receipts from Savannah; and from Mobile the receipts from Florida. The exports from Georgetown, S. C., to New-York are added to Charleston receipts, and from Darien to Liverpool and New-York to Savannah receipts.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

IMPROVEMENT IN PLANK-ROADS.

MESSRS. EDITORS: The advantages claimed for plank-roads are, that they are easier of draft in all weathers, and that in wet weather they are not broken up, and wheels do not sink into them. These claims are just with respect to "plank-roads that are plank-roads, and nothing else;" but with respect to that great number of roads that are composed of two or three inches of dirt spread over about the same depth of planking, the claim is but partially allowable. Upon a new *and clean* plank-road, the force of draft required is one in ninety-eight; but upon the dirty roads, usually but erroneously called plank-roads, the force required is little less than what is required upon a gravel road, or one in fifteen.

The apology made for allowing plank-roads to remain dirty, and for sometimes covering them with dirt or gravel, is that they are thus protected from wear. But if, at the same time, their utility is lessened in the proportion of six to one, the protection to the property of the road-proprietors is too dearly paid for by the excessive expenditure of motive power at the expense of the toll-payer; and we do not hesitate to say, that this condition of plank-roads is an imposition upon the public, in all cases in which county roads have been turned over to companies, to be planked by them, on condition of their levying tolls. Still, the theory is, "plank-roads don't pay; we lose by them." Perhaps the following improvement, suggested by an engineer who has studied the subject, may enable the proprietors to get paid, without gross injustice to those whom the legislature compels to pay them.

If a thin plate of wrought-iron, four or five inches wide, be laid directly over each sleeper, with one spike passing through each plank into the sleeper, to secure the plate, planks, and sleepers together, a road not much inferior to a rail-road, for moderate speed, will be the result. And the wheels, especially, when heavily loaded, will be kept upon the iron, and therefore directly over the sleepers, and will not break through the planks as they now do. As to the wear by the feet of animals, it may be greater than it would be if the planks were "protected" by dirt; but if the wheel-tracks be really good, a rough horse-track will not be complained of; nay, it may be preferred for the sake of the foot-hold it gives to animals. And when a hole is made, it may be filled up with a block or a stone; and thus, by trifling repairs, the road may be kept in order until it is thoroughly worn out.

Not so with mere planks; they become broken, and deep holes are made, into which the wheels fall with great damage to both the road and the carriage. Moreover, the effect of animals' feet is to wear the planks round at the edges, and, after a while, to convert a plank-road into something like a corduroy-road. These evils will be obviated by the iron plates; and the wheel-track will always remain easy of traction, if the road be kept clean.

On a good railway, the force of draft required is one in three hundred, or seven and a half pounds per ton; on an oak plank-road, when clean, twenty-three pounds per ton; hence, upon a level, a team can draw upon an iron surface, three times as much as upon wood. It may, however, be said that a thin plate of iron will bend under the wheel; that the wood also will suffer compression, and therefore, such a road will not compare with a rail, which bends much less. We allow something for this difference; but, on the other side, much more should be allowed for the speedy wear and deterioration of

planks that are not faced with iron. In this view, we may see that instead of drawing thrice as much, a team may draw six times as much as it could draw upon planks that had been crushed under heavy wheels and battered by horses' feet, even if the rounded edges and the dirt be not considered.

To iron a plank-road with plates five inches wide and a quarter of an inch thick, would require about two tons per mile, costing, say $160; add for spikes, $50; and for laying, $100; making $310 per mile, or about twenty-five per cent. additional cost, to increase the utility of the road threefold, and its durability to a very great extent.

Now, this estimate may be inexact; but we think that any intelligent proprietors, if there be any, will venture upon these reasons, if they are not at variance with their own, to iron a few rods of their road, as an experiment.

In reference to this matter, we invite attention to our article on steam-carriages, for which, see article on Great Exhibition. F.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CORN CULTURE IN VIRGINIA.

MESSRS. EDITORS: I promised you a short article on the culture of corn in the South.

Corn land should be well and deeply broken. Two good, strong horses will do, but three are better, hitched to strong two or three horse-ploughs. (Prouty & Mear, of Boston, make a superior plough; and there are several manufacturers of ploughs and farming implements at Richmond, Va., not often excelled.) Let the ground be broken up eight to ten inches, and if subsoiled, so much the better. If of stiff soil, it should be ploughed in the winter, particularly sod land. Let it be well harrowed in April, and laid off horizontally, so as not to disturb the sod; for good land, the rows should be four to four and a half feet wide; if land is level, it may be crossed, and four grains of corn dropped in the chuck; to be thinned out at the proper season, so as to leave two and occasionally three grains in the hill. If the land is rolling, plant in drills from nine to twelve and eighteen inches, agreeable to the strength of the land, one stalk to be left at a place.

The sod should never be disturbed, but worked on top, with three or five-tooth cultivators; twice or thrice going over will do; two strokes of the cultivator in each row at a working, followed with the hoes, to get out such weeds, &c., as the cultivator can't reach. Corn does best on sod lands, or clover-lays, as but few weeds follow those crops. As soon as the corn is sufficiently matured, which is generally from the 15th to 20th of September, with us, cut it off near the ground, and stack it snugly, two to three bushels to the shock, secured by two bands, one at the top, and the other about two feet below it. If well put up, it will stand all the winter; but it is better to crib it in November or December, and pack away the fodder for your milch cattle, &c.

In cutting up my corn, I usually, if it is heavy, put twelve rows together; first, about every eight to ten steps, bind and tie together four, six, or eight stalks; then fill up the squares, taking six rows through the field; after I have got through the field, in a day or two, finish the row of shocks, by bringing the remaining six rows, and making all snug and secure. This plan is necessary, if the corn is not well ripened. If the fodder is pretty well matured, you may finish the shocks as you go. If my corn is very tall, say nine

or ten feet high, I use small hand-ladders, with four or five rounds, that the shocks may be well secured, which is very important. Oats should follow corn; and wheat, oats. The land to be ploughed immediately preceding seeding with wheat. By ploughing under the volunteer oats, your land is clear for wheat. The land should now be laid down in grass for two or three years. Clover is the best fertilizing grass crop, and if sown with orchard-grass, which ripens about the same time with the clover, you have a fine crop for hay or grazing. I am under the impression that wire-grass may be killed by this process of cropping. Winter ploughing, and the sod well turned, are essential to the destruction of this grass.

Your obedient servant, &c.,

HENRY B. JONES.

Rockbridge County, Va., January 10, 1854.

COTTON CULTURE IN ALGERIA.

IN 1851, there were only six or seven acres planted to cotton in French Algeria as an experiment, which turned out satisfactorily. Last year, (1852,) fifty acres were planted with the like result; and in 1853, 1730 acres, which, from last accounts, was promising.

Mr. E. Feray, of Essones, one of the oldest and most distinguished cotton manufacturers of France, thus writes in a letter, which has been published in the *Moniteur*, touching Algerian Cotton, and the prospect of its culture in the Colony:

"I have carefully examined the specimens of Algerian Cotton, which form part of the permanent exhibition of the products of Algeria at the Ministry of War. These Cottons are produced from

Seeds of Georgia Sea Island Cotton.
" Louisiana Cotton.
" Egyptian "
" Nankin "
" Cotton grown in Algeria itself.

These cottons are all, without exception, of good quality, and suitable for manufacture. The Georgia long-staple cottons (sea-island) whether produced from American seed or from the seed of those cottons grown in Algeria, attracted, in a special manner, my attention. It is solely the Georgia long staple cottons that are adapted to the spinning of the fine numbers above 100,000 metres, (109,400 yards.) The manufacture is tributary for these cottons to the United States exclusively; and even there they can be cultivated in a limited extent of territory in Georgia, and upon the sea-shore, whence comes the name of sea-island, by which these cottons are designated in England. The crop of sea-island cotton in America varies from 25,000 to 30,000 bags per annum, and it has been found impossible notably to increase this production. They are worth at present, (25th May, 1853,) in the Havre market, ordinary qualities, from 700 to 800 francs the 100 kilograms, (equal to 59½ to 68 cents per lb.) In February last, they were only worth in Havre 550 francs, but the insufficiency of the crop to supply the wants of manufacture caused a gradual rise, which, at the present moment, is not less than 50 per cent. over the prices of February. There are not now to be found in Havre 500 bags of sea-island cotton, and manufacturers are obliged to pay what-

ever the holders please to ask. The American crop of 1852 was about 4,200,000 kilograms, (9,264,000 lbs. avoirdupois.) But the manufacture actually needs, of the fine numbers at the very least, 6,000,000 kilograms; and it is obliged to supply the 2,000,000 kilograms deficiency by recourse to the better quality of Egyptian cottons, which only answer, and that very imperfectly, for the numbers from 100 to 130. Egyptian cottons have also risen considerably in price. The demand for the fine numbers increasing daily, the manufacture would in ten years from this date call for upwards of 10,000,000 of kilograms (22,057,000 lbs.,) if the culture could supply this quantity at a reasonable price, say 500 francs the 100 kilograms. This price would leave to the producer a handsome profit. Of these ten millions of kilograms, worth fifty millions of francs, ($9,350,000,) America could not produce more than four or five millions; there remain about five millions of kilograms, equivalent to twenty-five millions of francs, for the country that can produce sea-island cotton. Egypt cannot do it. All the efforts which have been made in this direction have only resulted in the production of a strong nervous cotton, very good for the numbers from 60 to 80, and of which the first qualities very rarely may go up to No. 120. But Egyptian cotton does not possess either the fineness or the length of staple of the American Georgia sea-island cotton, and cannot be used for the higher numbers.

The cottons produced in Algeria from the seeds of Georgia sea-island cotton have preserved the qualities of the good American article, the strength, fineness and length of staple. These cottons, as well as those of the Province of Oran, as those of Blidah, would sell to-day in the Havre market at from 700 to 900 francs the 100 kilograms. The better qualities of these will spin up to the No. 300,000 metres, (328,000 yards,) that is to say absolutely the finest thread, the wants of manufacture hardly ever exceeding 250,000 metres. What proves that the sea-island cotton of Algerian production has not degenerated, is the fact that this cotton has yielded seeds which, planted in Algeria, have produced cotton comparable for fineness, length, and strength of staple, with the best American specimens sent to the Exhibition of London."

This subject is receiving a good deal of attention in France, and no reasonable efforts will be spared to extend the culture of our important staple in the new colony on the South side of the Mediterranean. Whether Algeria shall do better than British India in growing cotton, time alone can determine.

D. Lee.

HORTICULTURAL.

The culture of Roses is one of the pleasantest and surest kinds of floral labor. We give below a description of the mode of procedure which will secure flowers out of season. We find it in the (Eng.) *Gardener's Chronicle:*

Culture of Roses in Pots.—No person possessing a taste for floral beauty or fragrance can be insensible to the attractions of the Rose; and its praise has been so often told that it need not be repeated here as an excuse for offering to those of your readers who stand in need of such information, directions how to grow and flower it in pots, so as to be able to enjoy roses during the winter months. It is not very many years since it was considered impossible to produce good specimens of roses in pots, and in those days gar-

deners who could place a few sweet rose blossoms in the Christmas bouquet, were thought more than ordinarily clever: and as to keeping up a succession of handsome, well-bloomed plants in the flower-house during the winter and spring, that was not so much as dreamed of; for the few flowers obtained were produced by leggy and all but leafless plants, which were not fit to be seen, even amongst such examples of cultivation as the plant-houses of twenty years ago afforded. Now, however, thanks to the all-prevailing spirit of improvement, it is not unusual to see, in well-managed collections, specimens of Roses in bloom at Christmas, such as would not disgrace the rose-bed in June, and these are obtained at as little trouble or expense as is required in the production of many other plants which are commonly grown for winter flowering, and which possess neither the beauty nor the fragrance of the rose. To have well-cultivated, well-bloomed specimens at Christmas, the plants must be previously managed with a view to this end, and persons commencing this kind of culture will probably have to provide a stock of plants. I will begin with directions for propagation. The varieties best adapted for winter-flowering are Bourbons, Teas, and Hybrid Perpetuals, which are better on their own roots than budded, and they root very readily, especially when good strong cuttings can be obtained early in spring from plants growing under glass. Short-jointed, stiff pieces of the firm young wood planted in sandy soil, covered with a glass, and set in a shady corner of a warm house for a week, and then placed in a bottom heat of about 75° or 80° will be rooted and ready for potting singly in small pots in little more than a month. Indeed, I find the rose to strike so freely from cuttings under glass in early spring, that, when I obtain a variety which I wish to increase as fast as possible, I place it in a growing temperature in November, and when I have got a fair amount of growth in a proper state for cuttings, the plant is cut up: and well-ripened shoots, on which the eyes may be about an inch apart, are divided just above each eye, by which means each eye is made to form a cutting. For this method, however, the wood must be rather firmer than is necessary where two or three eyes are allowed to a cutting, as it is necessary to cut in a slanting direction on the side opposite the leaf for about half the length of the cutting, removing the bark and a thin shaving of the wood; this exposes a large surface of inner bark from which roots are ultimately emitted, and cuttings prepared in this manner will be found to root very freely, and form equally good plants as those having two or more eyes. It must be observed, however, that the success of this, as of all methods of propagation by cuttings depends upon selecting wood in the proper stage of maturity, and how to do this can hardly be learnt except by practice. But to return to our rooted cuttings. These should be potted singly in four inch pots as soon as they have become sufficiently strong to bear handling (using good fresh loam and decayed leaf-soil in about equal proportions, with a liberal mixture of sharp clean sand,) and placed in a close moist atmosphere till well established in their pots. They may then be removed to a light, airy, and rather cool situation, with a view to induce close stocky growth; for, let me remark, there will be nothing gained by keeping the plants, after they are well established in four-inch pots, in higher average temperature than 55°. It will doubtless be necessary, in order to secure a bushy habit of growth, to pinch off the top of the first shoot, and this should not be done until the plants are removed to a cool situation, nor while the eyes at the base are flat and imperfectly matured, otherwise the probability is that the top bud only will start. As soon as the plants are well rooted in their first pots, shift into others one or two sizes larger, as circumstances may point

out; and when moderately well-rooted, after the second shift remove them to a cold frame, and gradually inure them to full exposure to sun and air, merely protecting them from heavy rains and cold drying winds. During the summer months, a liberal supply of water must be given to the soil, using weak manure-water twice a week, and the plants should be syringed morning and evening during bright weather, and shifted into larger pots as may be necessary. Stop any gross, over-luxuriant shoots, and have a constant eye to the formation of dwarf compact specimens; also guard against the attacks of aphides, which will probably be somewhat troublesome, but they are easily destroyed by means of tobacco-smoke, and therefore should not be allowed to disfigure the plants. During summer, plants that are established after the first shift will be better removed to a warm sheltered corner out of doors, placing the pots on a bed of coal-ashes, to exclude worms, and where they will enjoy the night dews, and will not be so liable to red spider as if retained under glass. With good management, many of the plants should be nice compact specimens in seven-inch or eight-inch pots at the end of the first season's growth; and the Teas and Bourbons, if removed to a close pit or frame early in autumn, will continue growing and afford a succession of blossoms throughout the winter and spring months. But, where handsome specimens are desired, it will be better to afford the plants a second season's growth; as allowing them to flower would retard their progress the following season.

HELIOTROPE.

Many varieties of the Heliotrope have been introduced to cultivation within the last few years, but, taking all things into consideration there is perhaps none more desirable than the old well-known H. Peruvianum, a universal favorite on account of its delicious fragrance, which, combined with its free growth and profuseness of bloom, makes it a very desirable plant for furnishing bouquets during the winter months. By keeping up a succession of healthy young plants, flowers may be obtained at all seasons, with the aid of a warm greenhouse in cold weather. As a plant for the flower-beds during summer, it grows luxuriantly, provided the soil is moderately enriched. It is however very susceptible of cold, and will show the effects of a slight frost sooner than almost any other shrubby flower-garden plant. It is indeed an easily managed plant; cuttings of it will strike root at any season, and grow in any ordinary garden soil. To secure plants of sufficient strength to flower during early winter, cuttings should be inserted in June. They will form roots in two or three weeks at this season, if inserted in a shady situation; they should be immediately placed in small pots, and when these are filled with roots, shifted into flowering pots; eight-inch pots will be sufficient in size They now require to be grown in a situation fully exposed to the sun, and if the pots are plunged to their rims, less water will be required and the plants otherwise benefited. The roots of plants in pots fully exposed to the action of the sun and atmosphere are very liable to sustain injury. A few hours' neglect in watering will counteract the progress of weeks. The young, incipient points of roots are so easily destroyed that nothing short of the most vigilant attention can keep plants in a vigorous state when the pots are thus exposed. Hence the necessity of plunging the pots, that evaporation from their outer surfaces may be prevented. This is more especially necessary with pots of a soft or porous character. Hard burned-pots are condemned by many, for what reason I do not know. So far as my experience goes, I decidedly prefer pots glazed on the outside, both on account of the benefit they confer on the

plant, and their freedom from becoming green and unsightly when placed in a warm, humid atmosphere. This latter circumstance alone is worthy of consideration.

When the plants are removed into the green-house, they should be placed in the warmest position, near the light, in order to flower them freely. Plants that have been growing in the flower-beds during summer, lifted and potted before frost, will commence blooming in early spring. As a permanent climbing plant, for a green-house or conservatory, it is worthy of notice. When once properly established in such a position, it will keep in flower during the year, and speedily cover a large surface if allowed sufficient root-accommodation.—*Cor. of The Florist.*

CAST-IRON RAILS FOR RAILROADS.

Why cannot cast iron rails be used for railroads? is a question which has been examined at considerable length by Mr. R. W. Hughes, the able and accomplished editor of the *Richmond* (Va.) *Examiner*. We are not able to go over the whole ground in the present number of this magazine, but will notice the important considerations in favor of cast-iron rails, with the intention of returning to the subject again. After speaking of the importance of the subject, Mr. H. proceeds:

If this be so in reference to roads now in course of construction, the difficulty will but be increased with the growing demand for other roads. These facts, together with the present high price of railroad-iron, consequently press the question upon the intelligent mind, "Why cannot cast-iron rails be used on railways?"

The fact is daily before our eyes, that cast-iron is made to bear the heaviest burdens that can be imposed. It forms a part of almost all machinery, and is subjected to enormous strains. With it we construct houses and build bridges. It is given the preference over wrought-iron for railroad car wheels, which, when running at sixty miles an hour, make about nine hundred revolutions per minute, the cast-iron wheels thumping the road with the momentum due to that velocity. All these things are constantly presenting the important inquiry, whether cast-iron rails may not be safely used on roads? It is known to be vastly cheaper than rolled iron, and can be made at a profit for one third the price of rolled iron. It requires no very great expenditure to prepare the works requisite for its manufacture, but it may be run into bars directly from the ore, which abounds along many of the projected railway lines of Virginia.

Supposing its substitution practicable, no limit can be set to the industry and enterprise it at once calls into being. It invites population into our mountain lands now waste and barren, yet teeming with iron. It multiplies their value to owners, and increases the fund for taxation of the State. It projects railroads, by enabling them to be built by persons along their lines, who, by labor alone, could convert their iron lands and ore into active capital. By doing these things, it would so far cheapen railroad transportation, as to make those works far greater beneficiaries to the public than they now can be.

Indeed, no single result could be imagined which would tend so much to develop the resources of Virginia, and stimulate her enterprise, as the adoption of cast-iron rails on her projected railways. It would advance internal improvements in the State at least twenty years, and afford a cheaper, and, it is believed, more durable structure than we now have.

But the advantages which must result from the successful application of cast-iron rails to railway tracks, are far too numerous to be detailed. They suggest themselves to every reflecting and intelligent citizen. The question is, Can cast-iron be advantageously used on railways?

Whether all our ores will be suitable for the purpose, we shall not undertake to decide; but that we have large bodies of iron ore which, directly from the blast, will make more durable rails than many we now import, we have not the slighest doubt. The Lynchburg and Tennessee railroad runs through the county of Wythe, and within five or six miles of a body of iron ore, equal, if not superior, as it has often been competently pronounced, to any in the world. It is better than the Swedish; it is better than the Pennsylvania Juniata. It is unlimited in quantity, and may be gathered from the surface of the earth. Wood in abundance, and mountain streams for driving machinery are at hand; and withal, the iron is of so tough a texture, that castings, such as pots and ovens, made for the neighborhood, have frequently been tried by being pitched some ten or fifteen feet, several times, into a pile of stones, by the foundryman himself, under which severe test very few instances have been known of their being broken. Yet a railroad is to run for miles along this great iron deposit, the rails of which are ordered from England!

Descend one of those English mines, where for ages the work of excavation has been going on; go down a thousand feet or more, traverse these caverns for miles under the earth, until you are told the ocean is rolling above your head, and at the farthest extremities of these infernal caverns you will find men plying the pick-axe, and extracting iron ore. You will find railway tracks throughout one of these abodes of Pluto and Vulcan, leading to the shaft. Here a car is filled with ore. Inquire the destination of this car. The answer, calculated quite to astonish a citizen of Wythe, would be this: It is to be sent several miles to the shaft; then to be raised up a thousand feet to the surface of the earth; then hauled to the foundry to be made into pig metal; then to the rolling-mill to be converted into bars; then to the sea-coast to be shipped to the other continent. After crossing the Atlantic ocean, some three thousand miles, it is to go up James and Appomattox rivers; to be discharged at Port Walthal; to be hauled by railroad to Richmond, and thence by wagons from the depot to the canal; thence along the canal to Lynchburg, and thence by railroad and wagons to Wythe county, Virginia, to be distributed along the Lynchburg and Tennessee railroad, which runs over great iron deposits of that county, where iron lies upon the surface, of a much superior quality, and has to be removed out of its way in excavating for its track!

This case is similar to hundreds of others, and the practical remedy for this state of things is the adoption of cast-iron rails. Public opinion at first obstinately pronounced that cast-iron wheels could never be used—that they would break under the velocity required of them. Economy rendered it absolutely necessary to try them, and they have been found not only cheaper, but, in fact, to wear longer than wrought-iron wheels.

Strange as it may seem, all the early writers concur in stating, that cast-iron rails were used before the wrought, and that the latter were introduced chiefly on the ground that they were cheaper than cast-iron rails—cheaper for the reason, as then contended, that wrought-iron rails being not so likely to break, might be made much thinner and lighter than cast-iron, and would be more economical in that way. Since it has been found necessary to

increase the thickness and *weight* of the rail, for the purpose of firmness and steadiness in the superstructure, it has never occurred to the engineer to return to cast-iron rails.

Experience has shown that wrought-iron rails wear out rapidly, and this although they are now made heavier than it was supposed would be requisite even for cast-iron.

From an essay on this subject, by Ellwood Morris, Chief Engineer, Philadelphia, published in the Journal of the Franklin Institute, in the year 1841, we extract the following observations on this subject:

"We are informed in Wood's treatise upon railroads, that in the early part of the seventeenth century, railroads were first used in England, and they were then formed of wood; the wooden rails were used for about one hundred years, when, in 1767, cast-iron rails were first introduced, and thereafter continued for a period of near fifty years, to be used instead of any other materials; but in the year 1815, malleable iron rails were devised, and after Mr. Birkinshaw, in 1820, had obtained his patent for an improvement in the form of such rails, and applied the rolling-mill to their manufacture, they were very extensively adopted, and subsequent to that period of time, have been almost exclusively used. The chief reasons which seem to have induced engineers, both here and abroad, so much to prefer malleable before cast-iron rails, as to exclude the latter from use, appear to have been originally a belief that—

1. Malleable iron rails were cheaper than those of cast-iron.
2. Malleable iron rails being made in longer lengths, caused fewer joints.
3. Malleable iron rails were less liable to fracture from concussion.
4. Malleable iron rails were thought to be somewhat more durable."

The writer then takes up these reasons *seriatim*, and shows how little they are worth, when tested by experience.

That the first and principal reason for the introduction of malleable iron rails—their greater cheapness—has no foundation in truth, is apparent to every body at all conversant with the iron business; and yet, all the early writers on this subject concur in stating this as the chief reason for their introduction at the time.

Secondly. That cast-iron rails may now be made from sixteen to twenty feet in length, about as long as the rolled we are accustomed to see.

Thirdly. While malleable iron rails, of equal weight, may be less liable to fracture from percussion than cast-iron rails, yet there is no such impinging direct force on the rails in working a road suitably constructed, as would be likely to produce this. He compares the relative strength of the two metals, and makes the cast-iron rails proportionably heavier. He denies that the liability to fracture, at high velocities, is greater than when going slow, but shows the greater the velocity, the less will be the vertical pressure, and says upon the same principle it is that a musket ball, shot parallel along a horizontal plane, so as barely to touch it tangentially, will not press upon the plane at all within the limits of its level or point-blank range.

Whether these views agree or not with those commonly entertained, concerning fast trains on railways, they are, nevertheless, legitimate deductions from the established doctrine of forces, and serve to account for the small effect produced by the ordinary inequalities of a railroad, as shown in the results displayed by the following direct experiments touching this matter, which were made by Professor Barlow, and recorded in his work, on the "Strength of Materials," English edition, 1837. These experiments are conclusive, and establish beyond question, the fact, that the vertical stress im

posed on a railway by the transit of locomotive engines of velocities ranging from twenty-two to thirty-two miles an hour, is but little, if any, in excess of that produced by a quiescent load of the same weight!

More experiments, by Professor Barlow, were made with an ingenious and accurate instrument, to determine the deflection of rails under trains running at high speed; and as the deflection of the materials under a strain is as the insistant weight, the vertical pressure upon the rails is by this means accurately indicated..

Again, he says, after quoting largely from Professor Barlow's experiments: "These experiments having demonstrated, as they distinctly do, that the vertical stress of trains at speed, surpasses so little the effect of quiescent loads of the same weight, that it is only necessary to proportion the rails of railroads to resist quiescent and not concussive forces, to change the whole face of the question between cast and wrought-iron rails—they strike away all the objections heretofore urged against the brittleness of cast-iron; for it does not admit of doubt, that a beam of that material, of suitable proportions, is quite as competent to carry a quiescent load, as one of malleable iron." Again: "A cast-iron rail will yield sufficiently to impart a return to its proper level the moment it is relieved of the weight of a train; for it is well known that its elasticity and power of restoration after deflection, is within certain limits so perfect, that owing to its regularity in that respect, it was even proposed by Tredgold to use beams of cast-iron as weighing-machines, measuring the weights imposed by the deflections produced."

From the various experiments made, he deduces that the proportion between wrought and cast-iron rails, should be as 1 : 1 3-10— and says these calculations refer to rails supported at intervals only; but if the plan of continuous bearings should be adopted on railways, the propriety of which has been strongly urged by English engineers, as a perfect remedy for acknowledged defects, all objections against cast-iron rails must wholly vanish.

EDITORS' JOTTINGS, AND MECHANICAL RECORD.

Baltimore and Ohio Railroad Works.—The machine shop of the Baltimore and Ohio Railroad Company at Mount Clare, near Baltimore, is quite a curiosity, and well worth a visit. The whole management of the road is divided into three departments, namely, Transportation, of which Mr. John H. Done is master; Machinery, of which Mr. Hayes is master; Road, of which Mr. Bollman is master. The master of transportation performs the duty of superintending all the freighting throughout the whole length of the road, and has about seven hundred men under his command. The master of machinery has the entire control of the building of locomotives, cars, &c., and has about two thousand four hundred men under his control. The master of roads attends to all constructions and repairs of roads, depots, water stations, and other buildings, and has about nine hundred men under his control. Thus it will be seen that four thousand mechanics and laborers are employed in the several departments of the road.

The most interesting department is that of machinery. The first in the department are the blacksmith and moulding shops. Of the former there are six, devoted to the manufacture of the various parts of machinery. The first is for the preparation of the heavier portions of the machinery, such as shafts and axles of the cars and locomotives. In this shop there are twenty-four forges, several of which are attended by three hands each. This number is requisite

to handle with facility the heavy shafts, which are swung by a crane, and carried to a large steam-hammer in the centre of the shop. The hammer is managed by a lad, who, by simply turning a screw, regulates the force of blow to any required power. The hammer weighs fifteen hundred pounds. All the forges are blown by a pipe conducted from the blowing boxes in the main building. The other shops are for the manufacture of the smaller portions of machinery, and for repairs.

The principal machine shop is devoted exclusively to the turning and finishing of the nice and more important pieces of machinery, both of iron and brass. In this are some thirty lathes, and while one is engaged in polishing a small piece of brass-work, another is boring out the hub of a wheel, or preparing its surface for the tire. And the shop is exclusively for heavy work, such as planing down the rough surface of a heavy iron plate, or preparing the several parts of new bridges, which are in course of construction for the use of the road. Here, too, are the boilers, smoke-stacks, and furnaces of the locomotives manufactured, and also the tenders, which are constructed principally of iron.

In the moulding shops are two cupolas, blown by pipes from the main building, where all the iron is prepared, and where all the wheels and other necessary parts are cast. In this shop two tons of iron are cast daily. Twelve wheels are cast every day. On such occasions as the castings for the bridges are made, the amount of iron consumed is much larger.

The carpenter shops are for the construction and repair of cars. The company have just completed fifty-two cars, intended exclusively for the transportation of hogs and sheep. They are made with two floors, which will enable them to carry just twice the amount that can be carried by an ordinary car. Besides these, there are buildings for the trimming and painting of passenger-cars.

All the immense machinery is worked by two steam-engines, one of sixty horse power, and one of about thirty horse power.

The Company have nearly completed two powerful engines, one for passengers and the other for freight, and intended to be used on the western end of the road. There are also machine shops at Wheeling, Fetterman's, and at Martinsburg, the two former being for repairs, and the last for the construction of machinery. It is estimated that the machinery and stock on hand are alone worth one and a half millions of dollars.

Each shop has its foreman, who is responsible to the master presiding over the department to which it is attached. The road department is now engaged in the manufacture of two miles of rails, composed of three pieces. This rail is so arranged, that much of the danger of the trains running off will be avoided, by the breaks in the rail having a proper bearing upon the side rail. The whole number of buildings at Mount Clare, including car and engine houses, is thirty. The total number of cars now running, of all descriptions, is five thousand; and locomotives, with those now building, two hundred and eight.

The Baltimore and Ohio Railroad is next to the Erie road in length, the main stem, from Baltimore to Wheeling, being 380 miles, and the Washington branch, 40 miles. The road is of vast importance to those portions of Maryland and Virginia through which it passes, and opens a direct line of travel to the great West and South-west. It is under the very best of management; and the travelling public already find it one of the most safe and speedy means of reaching the great West from Baltimore and points further north. The freight of the road in agricultural products and coal, is enormous; and when its value as a means of passenger transit is fully appreciated, it will be second to none in the country in this particular. It passes through a most romantic region, and, during the warmer months, would fully compensate a lover of nature in pursuit of the beautiful and the sublime, for a ride over its entire length. Like the Erie road, it is a stupendous monument of the perseverance and enterprise of those who have overcome almost insurmountable obstacles, to effect its completion.

Camden and Amboy Railroad.—Passing on a steam-boat from Pier No. 1, North River, lately, on our way to Philadelphia, we found ourselves surrounded with new objects, and for the moment feared we had made a mistake. A little inspection, however, satisfied us that what we feared was another boat was

nothing more nor less than our old friend, the "JOHN POTTER," in a new dress! It has been re-painted, re-gilded, and re-furnished, "from stem to stern," and though always a beautiful boat, is now really magnificent. The splendor and comfort of the boat were the themes of frequent remark by numerous passengers, who, knowing the advantages of this route over the other, always give it the preference. Nor were they less enthusiastic in their admiration of the excellent viands prepared for the comfort of the "inner man," over which CAPT. SIMPSON presided with his wonted ease and gracefulness. Our preference for this route increases every time we pass over it. The beautiful scenery; the change from water to land, making a pleasing variety; the handsome cars, the sumptuous dinner on board the boat, the familiar intercourse with the officers, and the desire of all to please, really relieve travel of all disagreeableness, and render a trip to Philadelphia a pleasant pastime, rather than a burthen. We do not wonder that this route is so extensively patronized, as those who pass over it once, are sure to give it the preference over the other one.

NEW-JERSEY CENTRAL RAILROAD.—This road extends from New-York to Easton, Pa., from which place to Mauch Chunk a track is already graded for a road which will bring New-York within six hours of the coal regions. The value of this road can hardly be estimated. Coal can then be brought direct from the mines to New-York at any season of the year, which will tend to keep the price of that indispensable article at moderate rates. We see no reason why a train may not leave Mauch Chunk every thirty minutes through the entire year, laden with coal, which now finds its way to New-York *via* the Lehigh canal, which is closed during the cold season.

The construction of the New-Jersey Central Railroad has paved the way for this movement, so important to the city of New-York and surrounding places. The road is constructed of the best material, and in view of the increase of business by opening the Mauch Chunk road, the Company are about to lay a double track from Easton to New-York. It passes through the beautiful towns of Elizabethtown, Plainfield, Somerville, &c., and brings Easton within four hours of New-York. The engines and cars are of the best possible make, and its affairs are conducted with that enterprise and public spirit which might be expected from having so able and energetic a gentleman as JOHN T. JOHNSON, ESQ., for its President. When the thoroughfare is completed to Mauch Chunk, many a New-Yorker will visit the coal regions, and witness scenes and sights so startling in beauty and romance, that if described to him, would be regarded by him as a "second edition" of a Gulliver or a Munchausen!

ETHER AS A LOCOMOTIVE.—The steamboat Du Trembley has an engine adapted to the use of the combined vapors of ether and water. In order to secure the heat of the steam which has done its service, the spent steam is received in an apparatus consisting of several small vertical cylinders, standing close to each other, but not in contact, and their bases plunged in a reservoir of ether, which is under the apparatus which conveys the steam. The ether rises in the tubes and partly fills them. When the steam enters this apparatus and surrounds the tubes, the water is condensed, and the ether evaporates. This condensation produces a vacuum, which adds to the expansive force of the steam in extinguishing the resistance which it had encountered; and the ether vapor, collected in a separate compartment, above the vaporizing apparatus, and in which the tubes terminate, contributes a new force which is added to the steam.

The piston of the second cylinder may or may not be connected with the same beam as that of the steam cylinder. The ether vapor is treated like that of steam, being condensed by a jet of cold water which fills the apparatus around the tubes. The ether is then carried to the vaporizer, to commence another similar circuit.

In the four experiments tried by the commission, on the quantity of coal expended, the force of the engine was constant at about 70 horses. The quantity of coal consumed during the 36 hours and 50 minutes through which the experiments lasted, was 2860.9 kil., or 77.67 kil. per hour, and 1.11 kil. per horse power. When using the steam alone, under the same pressure, acting on the

two cylinders, the amount of coal consumed during the 28.18 hours, was 8519.5 kil., or 302 kil. per hour, and 4.31 to 4.51 per horse power.

The ether is not lost doing this work, and hence the cost of this combined steam is small. The greatest difficulty encountered was to secure the joints so closely as not to allow the escape of this subtle and inflammable vapor.

AMMONIA IN RAIN-WATER.—M. Bousingault has been making numerous experiments on the quantity of ammonia in rain-water, both in city and country. One station was at Paris, and the other at the old monastery of Liebfrauenberg, in the department of the Lower Rhine, and on the eastern slope of the Vosges. The proportions of ammonia varied, at Paris, from 1 to 5.45 milligrams, the mean being 3.35 milligrams per liter. At Liebfrauenberg, the rain-water hardly contained one milligram. The excess at Paris was attributed to emanations. The learned chemist says that "Paris may be viewed as a vast mass of smoking chimneys,"—not the most captivating view to be taken of that elegant city.

NEW PUBLISHING HOUSE.—The new publishing firm of Ivison & Phinney, who continue the well-known house established by the late Mark H. Newman, deserve, on several accounts, a cordial reception by "the trade" and the reading public. The gentlemen constituting the firm are both from old publishing houses, distinguished by many excellencies, business and personal. Mr. Ivison, commencing life in moderate circumstances, was the first to make the city of Auburn the conspicuous inland book-mart it long has been. His character and business energy had given him an honorable position in "the trade" prior to his connection with the late Mr. Newman; and during his connection with Mr. Newman, whose health was very infirm for several years, the chief labor of their extensive business devolved on Mr. Ivison. Mr. Phinney is from a veteran stock of publishers. His grandfather was one of the early friends of the celebrated Judge Cooper, the founder of Cooperstown, and before the beginning of the present century, published the *Otsego Herald*, referred to in the *Pioneers*, and one of the first newspapers printed west of Albany—a little, blue, 7 by 9 sheet, which, as now preserved, is a very mummy of a newspaper. Fenimore Cooper, the novelist, was, in his youth, regularly engaged on this paper; and not long before his death, acknowledged to a publisher in this city that much of his knowledge of printing, and the practical part of his authorly profession, were acquired in this office. This elder Phinney also commenced the publication of *Phinney's Calendar*, a famous almanac in the West, which has been continued, nearly in its original form, to the present time—a curious specimen of the infancy of book-making. His two sons, under the old firm of H. & E. Phinney, commenced business in Cooperstown in the early part of the century, and continued it under the same title, though in time embracing the son of one of them, till the death of the elder brother, in 1852, a period of over thirty years. They were an energetic pair, with strongly-marked and original characters, of whom many curious anecdotes are told among their old neighbors. Among their achievements, was the stereotyping, in the little village of Cooperstown, some thirty years ago, the Family Quarto Bible, of which they manufactured and sold untold thousands. On being burnt out in 1849, the business was removed to Buffalo, and reorganized under the firm of Phinney & Co., with two of the sons as leading partners, which still continues one of the largest and most responsible houses in the West.

With such antecedents, and with the experience, capital, and character which Ivison & Phinney bring to their business, it is fair to expect that their house will speedily take a place among the staunchest and most honorable publishing firms of this city.

HARPER & BROTHERS.—The calamity which recently befel this well-known house, by fire, is well known to our readers. They will be glad, also, to learn that they are again at work, at 82 Beekman street. We make the following abstract of their immense business, as published in the January number of their magazine:

They employed 33 Adams power-presses, of the largest and best description, each of which averaged 6000 impressions, or 190,000 16mo pages, a day. Sixteen of the presses had been built expressly for working wood-cuts. About 40 compositors were employed in their buildings, much of the type-setting being done elsewhere by stereotypists, who supplied them with plates. Their own stereotyping rooms employed about 20 men, who made from 25 to 30 casts a day, averaging about 120 pages. A new department had just been added, for carrying on the process of electrotyping, an art but lately introduced.

The bindery employed about 250 persons, 150 being females. Besides the 130,000 copies of their monthly magazine, they had daily on hand, and in process of binding, over 12,000 volumes of books. Since the Harpers have been in business, a period of about 36 years, they have published about 1,549 works, including 2,028 volumes.

A Fanciful Gate.—A correspondent of the *Home Journal* gives a pleasant account of a gate he passed through. The gate was a common one, shut by a chain and ball. But the post to which the inner end of the chain was attached was carved and painted in the likeness of a negro, with one hand raised to his cocked hat, and the other extended to welcome you in. As you opened the gate toward you, in going in, the negro post-pointer bent toward you, by a joint in his back fairly bowing you in. Upon letting the gate go to, a spring in his back "brought him up standing" again, ready for the next comer. This faithful fellow performed the amiable for his master for many years, without reward, except now and then a new coat—of paint; and finally died of a rheumatic back, contracted in his master's service.

The Apple Man in 1853.—Mr. N. P. Morrison, of Somerville, last year received $10 for one barrel and twenty-eight apples of the Hubbardston variety. These apples were sold by the retailer at fifty to seventy-five cents a dozen. Mr. M. cultivates, says the *New-England Farmer*, eight acres of land; his fruit, this barren year, 1853, brought him $850. For twenty-six bushels of apples he received $60. For one hundred and thirty-six barrels, he received $408. For strawberries and raspberries, $100. The balance, to make up the whole sum, $850, was for cider-apples, sold at from eight to twelve cents a bushel, and for early wind-falls sold in July and August. Perhaps some of our young men will come to the conclusion that the market for *good* fruit is not yet over-stocked.

The Dauphin and Susquehanna Coal and Railroad Company have completed their connection from Harrisburg to the line of the Reading Railroad at Auburn, with the exception of two miles of heavy excavation. We understand now that the road is entirely finished, and that an engine will run over it on Monday next.

County Societies in Ohio.—Of the eighty-eight counties in the State of Ohio, seventy-five have an organized agricultural society, and held fairs last year. This far exceeds those of any other State in the Union. Of the thirty-one States, seventeen have State fairs.

The Belvidere and Trenton Railroad was opened to Easton on the 16th inst. By this road the distance from Easton to Philadelphia will be about the same distance it is from Easton to New-York by the Central Railroad of New-Jersey.

Improved Car-brake.—Mr. Marcus P. Norton, of West Poultney, Vt., has secured a patent for a Brake for Railroad Cars, which will have a tendency to diminish the number of accidents, and save the machinery of the cars. It is so constructed that all the brakes are applied to the wheels at the same time, throughout the entire train. This is done by the engineer or baggage-master. In case of collision, the engine may be separated from the train, thus removing some thirty tons of burthen from the train, which renders the passenger-cars more easy to be suddenly stopped; if any thing is to be destroyed, it *must* be the engine. The same kind of brakes are on the engine, but it cannot be stopped so quick as the passenger cars, on account of the great weight which is in such

rapid motion. The cars may be stopped in two or three rods. It is, also, so constructed, that if an axletree breaks, it cannot fall or rise up; it must, therefore, keep in its place, and the train upon the track. There is no strain in the bearings, or upon the wheels; no loose chains to be gathered up before the brakes are applied, but are instantly brought to act on the wheels. If a rubber should break, it cannot fall under the wheel and throw the train from the track, as is sometimes the case by the ones now in use. The brakes are applied to the sides of the wheels, and being applied to all the wheels at the same time, remove all strain upon different parts of the machinery and throw it upon each part alike. So much friction being applied at the same time, the train *must* stop.

American Wool.—Peter A. Browne, Esq., of Philadelphia, who has given great attention to the subject, in a communication to the *Richmond* (Va.) *Whig*, asserts that he can show that "as fine fleece can be procured in the United States as in any portion of the world." He says that he has in his possession wool grown in Allegheny county, Penn., by William Hall, which measures from 1-2186 to 1-2500 part of an inch, while the finest wool in the collection sent to him by the King of Prussia, and the finest among the specimens sent to him by the King of Saxony measures 1-2186. Mr. Browne denies the correctness of the decision on this subject at the London Crystal Palace Exhibition, and produces facts to show that the jury on wool did injustice to the specimens of American wool exhibited.

Important to Milk-Dealers.—*Milk-Dealer.*—"Mr. Registrar, I come to pay my bill for water tax; but I would like to know why I am charged five dollars more than last year."

Water Registrar.—"You did not keep milk for sale last year, I believe."

M. D.—"I did not."

W. R.—"You sell milk now."

M. D.—"I do."

W. R.—"Your bill 's all right, sir. Five dollars a year for extra Cochituate to milk-dealers is a moderate tax."

Exit milk-dealer, looking as though he had been skimmed.

Artificial Silicification of Limestones.—This process consists in impregnating the limestone with silicate of potash, and has been used on a grand scale in certain parts of the cathedral of Notre Dame. The architect of the cathedral reports as follows:

1. The infiltration of silica made upon the terraces, "et contrefort du choeur," in October, 1852, have preserved the stone from the green moss that covers stones in moist places. 2. That the gutters and flagging of limestone, subjected to this process, present surfaces perfectly dry, covered with a silicious crust. 3. That upon stones so prepared, dust and spider-webs are less common than upon the stone in the ordinary state. The report also states that tender stones have become hard; have lost their porosity, and that after they are washed, they dry more rapidly than stones not silicified.

We regard this as a very important discovery, nor do we see why it may not open very widely the door for the sculptor, enabling him to work on the softer rocks, and harden their surfaces afterwards. This is precisely what was done by Mr. Samuel Perkins, in relation to the use of steel for engravings. The work is done on soft iron, and then the engraved plate is converted into steel.

We hope our own artists will make their experiments in this direction, and lead their foreign brothers into paths which, though they were the first to open, they were not the first to explore.

Vitrification of Photographic Pictures.—Here we are promised another step of progress in the most wonderful art of photography. M. Plant, the author of the process, first procured a photograph on glass covered with albumen, and subjected it gradually to a strong heat, so as to redden the glass. The albumen was destroyed, and the photograph, if negative, became positive by reflection. The picture was made of pure silver, which adheres quite strongly to the glass, so that it may be polished without alteration.

SAL-AMMONIAC MANUFACTURED AT GAS WORKS.—MM. Moerhlin & Stoll have obtained a premium from the Industrial Society of Mulhausen, for the manufacture of sal-ammoniac from the ammoniacal liquid of gas works. The process is as follows: The ammoniacal liquid is mixed with slaked lime, and is then submitted to distillation in a boiler heated by steam. The parts volatilized pass into a worm, in which the larger part of the tar is deposited. The ammonia passes on into a Wolff's apparatus, where it leaves the foreign substances present, and is finally carried into cold water, where it is condensed, in a nearly pure state. It is then neutralized with chloro-hydric acid, and evaporated in a lead boiler.

As it is deposited, it is withdrawn by means of a wooden rake, and is allowed to drain. It is then introduced into a brick mould, and subjected to a strong pressure. Blocks of sal-ammoniac are thus obtained, which are dried in an oven, heated by the evaporating furnace.

PERMANENT MAGNETS are now made of cast-iron, by means of an electric current. The only difficulty consists in tempering the metal. They must be tempered at a bright red heat.

NEW USE OF BALLOONS.—Experiments have been successfully made in the use of balloons as a hydrostatic apparatus. The particular object in view was to raise heavy bodies in deep water, and it may also be applied, perhaps, in navigation, for the passage of sand-banks. A balloon of four metres in diameter raised at least 31,000 killograms, and if filled with hydrogen, the effect would be much greater. Dr. Gianetti, the experimenter, used carbonic acid, which he obtained by the decomposition of a carbonate *at the bottom of the sea*. The power of such apparatus would be proportioned to the difference between the weight of the gas filling the balloon, and that of the water in which it is immersed of the same bulk. It seems a very great improvement over hogsheads, and the like, which are sometimes used for similar purposes.

EFFECT OF INDUSTRY.—We regret that we did not observe the following table before our January issue. We might then have made a more emphatic statement of the ENORMOUS VALUE given to that which costs a mere trifle, by the labors of an artist. A number of the *British Quarterly Review* gives the following calculation:

Bar-iron, worth only £1 sterling, is worth, when worked into

Horse-shoes,	£2 10
Table Knives,	36 00
Needles,	71 00
Pen-knife blades,	657 00
Polished buttons and buckles,	897 00
Balance springs for watches,	50,000 00

NOW AND THEN.—The difference between the state of things now and some seventy years ago, is strongly exhibited by the reading of the following singular proclamation. The object of Mr. Paine is evident from the document itself. It was published in the papers.

"As the subscriber is appointed by the Honorable Trustees of Dartmouth College to carry into execution the erection of an edifice for said college, for which there will be wanted a large quantity of lime,

"These are therefore to request those who know of a quantity of lime within thirty miles of said college, that will answer the purpose, and also of any person or persons who will undertake the making of it, to give the subscriber information; in doing which they will contribute towards the professed design and advantage themselves by undertaking. ELISHA PAINE."

"*Lebanon, Sept.* 22, 1784."

THE AMERICAN JOURNAL OF SCIENCE AND ARTS, conducted by learned gentlemen, at New-Haven, Ct., to which we are indebted for the statements of two or three new discoveries on the arts on a previous page, retains the eminent distinction it has so long possessed over all other scientific journals in this coun-

try. It ought to have a vastly increased patronage, and the fact that it takes so very high a stand in matters of science, is probably the reason why it is not more generally read. It is beyond the reach of all but a few. Still it should be patronized by all. The subscription of a five-dollar note is due the learned editors from every lover of science, whether he reads the journal or not. It is due for the honor of the country. The work is very poorly sustained. Gentlemen of wealth, send them a New Year's gift.

CLEMENTS' LIVE-STOCK AGENCY.—While in Philadelphia recently, we visited the extensive live-stock agency of Aaron Clements, Esq., in Cedar street. Mr. C. has the choicest breeds of cattle, horses, hogs, sheep, turkeys, ducks, hens, &c., &c., constantly on hand, which he is selling at a fair price, and thus affording the agricultural community easy and cheap facilities for improving their stock. He ships to any part of the Union, and orders may be given by mail with every assurance that they will be promptly and satisfactorily answered. Mr. C. has been engaged in raising stock for more than a quarter of a century, and possesses unusual qualifications for conducting such an agency.

MILK FOR MANUFACTURERS.—Milk now possesses other offices besides the production of butter and cheese, and the flavoring of tea. It has made its way into the textile factories, and has become a valuable adjunct in the hands of the calico-printer, and the woolen manufacturer. In the class of pigment-printing work, which, indeed, is a species of painting, the colors are laid on the face of the goods in an insoluble condition, so as to present a full, brilliant face. As a vehicle for effecting this process of decoration, the insoluble albumen obtained from eggs was always used until Mr. Pattison, of Glasgow, found a more economical substitute in milk. For this purpose buttermilk is now bought up in large quantities from the farmers, and the required insoluble matter is obtained from it at a price far below that of the egg-albumen. This matter the patentee called "Iacbrine." A second application of the same article—milk—has just been developed, by causes arising out of the recent high price of olive oil. The woolen manufacturers are now using the high-priced article mixed with milk. This mixture is said to answer much better than oil alone, the animal fat contained in the globules of the milk apparently furnishing an element of more powerful effect upon the woolen fibres than the pure vegetable oil alone.—*London Medical Journal.*

SELF-ADJUSTING SWITCH.—The *Buffalo Commercial* says: "A trial of Dick's self-adjusting switch was made Thursday afternoon, on the Buffalo and New-York City Railroad, and was entirely successful. The main object of the invention is to provide against the accidents which too frequently occur on railroads through the carelessness of switch-tenders, in leaving open the switches when a train is about to pass over the main track. This it effectually does by means of a spring, which, being touched by the wheels of the locomotive as they pass along, instantly throws back the switch into the main track. A locomotive was driven over the main track at a very high rate of speed, when the switch was open; and the instant the spring was touched, the rails sprang back into their proper place, and the locomotive passed safely along. It has the appearance of being a most hazardous experiment, but after its operation has once been witnessed, all fear of an accident is at an end. The engine was driven by Myron E. Brown, engineer, and A. D. Garlick, assistant. The experiment was witnessed by a large number of persons connected with, and interested in railroads, all of whom expressed much satisfaction at the operation of the switch. Mr. James W. Dick, the patentee, is in a fair way of realizing a good profit from his ingenious invention."

IMPROVEMENT IN BUILDING.—An improvement is introduced in a fine row of stores going up in Chambers street, worthy of attention. In constructing the walls, an iron girder is used, which serves two valuable purposes. It is of the shape of an H on its side, (thus, ⊐,) and is built into the wall, longitudinally, at the point intersected by the floor-beams, the ends of which are made to rest on the same; and by this means fire is prevented from communicating

between the extremities of the floor-beams, they being separated by about two inches of solid iron. A primary object, however, is to facilitate the conversion of two or more stores into one, or their restoration to the original number; for, the girders being supported throughout their length by perpendicular iron posts, the masonry of the walls may be at any time removed, leaving the iron work unimpaired.

SAFES.—Upon the subject of fire-proof and burglar-proof safes, there has been, and still is, a great difference of opinion among men of all classes.

In the general outside appearance of safes of our principal makers, there is great similarity; but in the locks used, and in the mode of putting together, and in what may be considered of more importance, safety from fire, which depends much upon the packing, as it is termed, there is great odds, as we have proofs from almost every great fire that occurs in our city.

Our friends need not to be directed; yet if before purchasing, they will call at No. 33 Maiden Lane, and examine there what saved thousands in the great fire in Pearl street, and then take a look at the stock ready for similar or any fiery trial, and burglar-proof, we feel sure that they will do as one of us did, mark one, and order it sent home, feeling that he had as good, if not the best, safe his money would buy.

This house is not as old as some others in our city; yet that is no reason why they should not make a better safe. Progress is the order of the age; and while some plod on in the beaten track, others strike boldly forth, and do works that astonish the world. So if McFarland's new improved fire and burglar-proof safe saves valuable property from destruction, it were better than to be burned up in a safe of ancient fame.

AMERICAN MADDER.—The experiments which have of late been made with home-grown madder, have proved that, when properly heated, American is equal to the best French madder. Like Turkey, Dutch, or Alsace madders, the American requires the addition of a little chalk to produce the best effects.

During the past winter, the Merrimack Company, Lowell, have used, with great success, some madder grown in Montague, Franklin county, Mass., and are now about to dye some calico with this Massachusetts madder, to be exhibited at the New-York Crystal Palace. The same Company has also received a small sample of madder grown in Georgia, which proves to be an excellent article—quite equal to that of Massachusetts.

We have been informed that there grows wild in Florida, a plant, whose root, when eaten by hogs, colors their bones red. Such is the effect of madder. Doubtless this is an indigenous species, whose cultivation would richly reward the planter. It is hoped that samples of this "Pink-root," as it is termed in Florida, may be forwarded to Lowell for trial in dyeing. It is very desirable to determine whether it is madder requiring the peculiar treatment of all other madders, (except the Avignon,) to produce the fullest, fastest, and most brilliant colors.

OYSTERS.—According to the *Baltimore American*, the product of the oyster trade of the city is equal to or greater than the product of all the wheat and corn raised in the State of Maryland. The whole shores of the Chesapeake Bay and its tributaries are adapted to the growth of the oyster, and as but one year is required for their full growth, an immense profit accrues to those engaged in the business—a profit which is estimated at some three hundred to six hundred per cent. There are 250 vessels engaged in the business, which average about 900 bushels to the cargo, and require nine or ten days for the trip. These vessels, making in the aggregate 6000 trips during the eight months in the year in which they are engaged, give a total of 4,800,000 bushels per year sold in the Baltimore market. The oysters bring an average price of fifty cents per bushel, which gives a grand total of $2,400,000 per year paid for oysters by the dealers in the city. Some of the houses send by the Baltimore and Ohio, and Baltimore and Susquehanna Railroad, to say nothing of the other modes of transportation from eight to ten tons of "canned" oysters per day. The shells are carried

manure to all parts of Virginia and North Carolina. In the "shocking" of oysters, the shells will increase about one fourth, which would give a total of about 6,000,000 bushels of shells, which sell for two cents per bushel, making a return of $120,000 per year for the shells alone.

NEW BOOKS.

THE LOST PRINCE; Facts Going to Prove the Identity of Louis XVII. of France and the Rev. Eleazar Williams, &c. By JOHN H. HANSON. New-York: G. P. Putnam. 1854. pp. 479.

WE commenced the examination of this volume free from prejudice; and while we know that it is easy to pronounce a course of reasoning as illogical and unsatisfactory, even without the trouble of weighing it, we are also aware that those who enter upon new fields of inquiry, or who depart from the beaten track of established opinions, must encounter no little reproach.

But we do not hesitate to say that the testimony and circumstantial evidence here set forth, if not forged, are stronger and more satisfactory than that which is presented in a majority of verdicts in our courts, in all sorts of disputed cases.

It may be interesting to our readers to know something of the kind of evidence relied upon by our author. We depart from our usual course, and give a very meagre abstract of more prominent points.

It is not denied by any person that a plan was laid for the escape of the young Prince from his confinement. It is also admitted by all, (that is by Duchesne, who denies in his book that the Prince is now living) that one of his keepers was privy to this plan. It was desired by all parties of the revolutionists to be rid of him, and a motion was actually made in the Assembly that he be exiled.

At the time of his pretended death, he was visited by a Committee of the Assembly, who took no measures to establish the identity of the corpse before them, but were satisfied with the general statements of his attendants.

Surgeons were appointed to examine the question of identity, but they made no such examination, nor do they testify to this point.

The young Prince was diseased in all his joints, especially in his knees. The surgeons describe two tumors only, namely, in the right knee and the left wrist.

M. Desault, his family physician, who well knew his condition, described his disease as the *germ* of a scrofulous affection. This physician *suddenly died*, it is said, by poison, just before the "death" of the Prince. The surgeons say that in the subject they examined, were the marks of scrofulous disease, "which had existed a long time." Tumors were in *both knees, both wrists, and both elbows.*

All his keepers describe the Prince as mentally imbecile and silent, while the boy who died was "talkative, forward, animative, imaginative."

Persons familiar with the Prince, publicly pronounce it as their opinion, that the child that died, whom they also saw, was not the Prince.

In 1795, and afterwards, arrests were made *by the French Government*, of persons *charged with being the Dauphin.* In the same year, Charette issued a proclamation to the army of Vendee, in which he declares that the Dauphin was then in his possession; and again, it is asserted that Cambaceres and others acknowledged that the public "were deceived on this subject," but would never reveal what he knew. The sister and other relatives of the Prince have apparently believed and known the Prince to be still alive. Thus far, as to the fact of the death of the Dauphin.

Turn now to this country. Soon after these events had transpired, two French children were brought here, and resided for a time in Albany, where the peculiar appearance of the boy was a subject of common observation among families of the highest respectability; and the contrast noted between him and those who acted as his parents, or guardians, and these were so dissimilar in their appearance, that they were not then supposed to be husband and wife. These people had many articles of very great value, which had "belonged to the deceased King and Queen of France." They suddenly disappeared, none knew whither.

About the same time, two Frenchmen, one, apparently, a Catholic priest, brought a weak, sickly boy to Ticonderoga, and left him there among the Indians. These two men informed a Mr. O'Brien that the boy was born in France, and he, having often seen him, both in youth and manhood, testifies that this "boy" is the same

person with Mr. Williams. The Indian reputed to be his mother, has frequently called him her "adopted son;" and while the names of all her *other* children are duly registered, no entry is made of his.

The recollections of Mr. Williams, who is an Episcopalian clergyman, and who has been a missionary of unsullied reputation for many years among those Indians, do not extend beyond his twelfth year, or thereabout. All beyond is mist and confusion. But when Prof. Day, of New-Haven, in an interview with Mr. Williams, was showing to him, among many others, a certain portrait, *the name of which was concealed*, "Good God," cried Mr. W., "I know that face; it has haunted me through life!" It proved to be the portrait of Simon, the jailor of the young Prince!

Many French gentlemen, some of them artists, familiar with the faces of the royal family, pronounce that of Mr. Williams to be a Bourbon, and specify the peculiarities about it. The scars which they, some of them, remember on the face of the young Prince, are now visible on his. Again, Count de Balbi, an illegitimate son of Louis XVIII., was for a time in this country, and formed numerous acquaintances. Some of them, on meeting Mr. Williams, have mistaken him for the Count, and have addressed him as such.

The Prince de Joinville, when in this country, it is shown by several witnesses well known to the public, spoke of Mr. Williams with great interest, and asked for an introduction to him, going, apparently, out of his way to see him. Mr. Williams declares that in a private interview, he, the Prince, told him that he was the Dauphin. And though, on the publication of this statement in *Putnam's Magazine*, the *Prince came out with a flat denial of the whole story*, he denies too much, and entirely destroys all the weight of his statement; for he denies what is sworn to by half a dozen witnesses, the captain and passengers of the steamer; and no jury in the world but would pronounce his positive declarations as *thoroughly impeached*. This tells very strongly for Mr. Williams's correctness; and why should De Joinville think them worthy of any notice? We have thus given a very meagre account of this singular affair. But it is enough to show its nature; and those who wish for more light must order the book. They will then see, that *not half has been told* in this abstract, though it is all for which we have space.

And though one of our Puritan editors, and one or more of our city press, seem to consider this mass of testimony, some of which is from the most respectable citizens of this country, as quite unworthy of attention, we are willing to place ourselves in company with such learned, accomplished, and judicious men as Rev. Dr. Hawks and the Hon. John C. Spencer, and others, in the list of those who attach to it no small degree of consideration.

THE MISSIONARY OF KILMANY; being a Memoir of Alexander Paterson, with notices of Robert Edie. By the Rev. JOHN BAILLIE. New-York: Robert Carter & Bros. 1853. 12mo. pp. 253.

MR. PATERSON was a convert to the preaching of Dr Chalmers, who befriended him to the day of his death. He was a faithful missionary, and has preserved the journal of his humble but very successful labors among the poor, in these unpretending but well-written pages.

CLINTON; a Book for Boys. By WM. SIMONDS, author of "Boys Own Guide," "Friendly Words," &c. Boston: Gould & Lincoln. 1854.

THIS is a well-told story, designed merely to illustrate the importance of early habits of industry and obedience, the danger of vicious companions, and the ability to say No. Kindred and collateral topics are of course brought out, and all is done in good taste, and interests the reader.

THE AMERICAN STATESMAN; or, Illustrations of the Life and Character of Daniel Webster, designed for American Youth. By Rev. JOSEPH BANVARD. Boston: Gould & Lincoln. 1853. 12mo. pp. 334.

THE name of Daniel Webster is a host in itself, and is intensely suggestive of great thoughts. Every incident of his life, as one after another is brought to our attention, is but a new phase of mountain scenery. Hence this volume cannot fail to be attractive. But we think that Mr. Banvard has tried to accomplish two things that are inconsistent, though we scarcely know how to define the term "youth." If he uses it in its popular sense, the plan of the work is quite deficient. If by "youth,"

he means all not belonging to old age, he should have omitted sundry paragraphs of advice, unsuited to all but the very young and useless to them, and some really childish allusions. The few points selected for prominent relief, however, in this little volume, if for understanding readers, are generally very judiciously selected. All such will read the volume with pleasure.

HAPS AND MISHAPS, of a Tour in Europe. By GRACE GREENWOOD. Boston: Ticknor, Reed & Fields. 1854. 12mo. pp. 437.

GRACE GREENWOOD is one of our most sprightly writers. She is never sleepy, and is very successful in keeping her readers awake. As a traveller, she is remarkable. Her words are apt, and her opinions quite worthy of respect. She knows what is worthy of notice, and how to convey the best idea of what she describes to the mind of others. Hence her journal is peculiarly attractive. We have read it with great interest.

THE PRIEST AND THE HUGUENOT; or, Persecution in the age of Louis XV. From the French of L. BUNGENER. Boston: Gould & Lincoln. 2 vols. 12mo. 1854.

M. BUNGENER was a minister of the Reformed Church of Geneva. He is an able man and a powerful writer. His object is to give a history of the persecutions of those times. A former work, kindred to this, entitled "The Priest and the King," we have not seen. But this work we have read with intense interest, and commend it, unqualifiedly, to all our readers.

GLAD TIDINGS; or, the Gospel of Peace; a series of Daily Meditations for Christian Disciples. By Rev. R. W. TWEEDIE, D.D., of Edinburgh. Boston: Gould & Lincoln. 1 vol. 12mo. pp. 276. 1854.

THIS little volume is composed of some 120 or 130 short articles, on some important religious topic, accompanied by some passage of Scripture, and a selection of poetry. All evangelical denominations will give to it their hearty approval.

THE CHRISTIAN WORLD UNMASKED. By JOHN BERRIDGE, A.M.; with a Life of the Author, by Rev. Thomas Guthrie, D.D., Edinburgh. Boston: Gould & Lincoln. 1853. 12mo. pp. 183.

JOHN BERRIDGE is a quaint and racy writer. The book represents a spiritual physician, prescribing for a sinner ignorant of his own malady. His introductory sentences are a fair sample of the whole. "Lend me a chair, and I will sit down and talk with you. If my company proves unseasonable, or my discourse unsavory, you may be relieved from both by a single cast of your eye." Few will fail to listen, till he has finished his discourse.

THE RELIGIONS OF THE WORLD AND THEIR RELATIONS TO CHRISTIANITY. By FREDERICK DENISON MAURICE, M.A., from third revised London edition. Boston: Gould & Lincoln. 1854.

THE substance of these lectures was delivered, according to the directions of Boyle's will, in one of the London churches, at stated times, in 1845 and 1846. They embrace a view of the origin, principles, and character of Mohammedanism, Hindooism, Buddhism, and the old Persian faith, with the relations of each to Christianity. They are ably written by one who was well informed in his subject, and are replete with interest.

HOT CORN; Life-Scenes in New-York Illustrated. By SOLON ROBINSON. New-York: Dewitt & Davenport. 12mo. pp. 408. Price, $1.25. Elegantly bound.

THIS work is written in good style, and is brim-full of intensely interesting scenes. While we were reading some of the stories, as they originally appeared in the *Tribune*, we thought them capital, but the work of a vivid imagination. We have, however, been assured by the author, that if the volume has any merit, it consists in its truthfulness. This adds wonderfully to its interest. If any one would know what poverty is, and what is the severity of suffering, too common, alas, in all large cities, and *the mode of cure*, let him read these pathetic tales.

CARL KRINCKEN; or, The Christmas Stocking. New-York: G. P. Putnam. 1854.

THIS is a capital juvenile. The book consists of stories that are told, and well told, to little Carl, by the different articles which he found in his stocking on Christmas morning. Every boy would like it in his library.

List of Patents Issued,

FROM DEC. 6 TO JAN. 3.

[Our list of new patents is unbroken thus far, though in our last number the dates were misprinted.]

James Cochrane, of New-York, N. Y., for improvement in hydrant valve.

John Comstock, of New-London, Ct., for improvement in bit-stocks of braces.

Norman Cook, of New-York, N. Y., for improvement in mode of fixing the colors of cotton umbrellas.

Carmi Hart, of Bridgeport, Conn., for improvement in car wheels.

Jos. Nock, of Philadelphia, Pa., for improvement in inkstand covers.

F. S. Hotchkiss and C. W. Blakeslee, of Northfield, Conn., for improvement in spring clamps for clothes-lines.

Melvin Jinks, of Wayland, N. Y., for improvement in turnkeys.

W. E. Merril and Freeman Tupper, of Nashua, N. H., for improvement in bedstead-fastenings.

J. E. Nesen, of Buffalo, N. Y., for improvement in harvesters and binders.

Chas. Page, of North Danvers, Mass., for improvement in sectional bedsteads.

Joseph Sawyer and Lyman Clark, of South Royalston, Mass., for improvement in peg rasps.

Jno. Wilmington, of South Bend, Ind., for improvement in machines for cutting sheet-metal.

J. R. Bassett, assignor to James B. Williams, of Cincinnati, O., for improvement in pump-valves.

John Butter, assignor to James Sully and John Butter, of Buffalo, N. Y., for improvement for machines for moulding brick.

J. E. Brown and S. L. Bartlett, of Woonsocket, R. I., for improvement in grain and grass-harvesters.

William C. Creamer, of New-Haven Co., Conn., for improvement in operating brakes by signal cards.

B. H. Franklin, of Worcester, Mass., for improvement in manure and other forks.

Uriah H. Goble, of Springfield, O., for improvement in grain and grass-harvesters.

Joseph and James Montgomery, of Lancaster, Pa., for improvement in shoes to winnowers.

T. F. Nelson, of Clarke Co., Va., for improvement in manure-crushers and sowers.

Wm. and Thomas Schnebly, of New-York city, for improvement in grain and grass-harvesters.

H. N. Tripp, of Alfred, Me., for improvement in power-rakes.

R. P. Walker, of New-York city, for improvement in hulling and scouring coffee.

J. B. Armstrong, of Barnwell, S. C., for improvement in cotton-presses.

Charles Atwood, of Birmingham, (Derby,) Conn., for improvement in attaching hooks and eyes to cards.

D. E. and M. Battershall, of Troy, N. Y., for improvement in candle-mould machines.

James Baxendale, of Providence, R. I., for improvement in stamping patterns on rollers.

James Bolton, M.D., of Richmond, Va., for improvement in hot-air furnaces.

Lazare Cantel, of New-York, N. Y., for improved metallic trunk-frames.

David Carroll, of Baltimore, Md., for improvement in shuttles.

John D'Homergue, of New-York, N. Y., for improvement in car-brakes.

Alexander Frankenberg, of Columbus, O., for improvement in soda-water fountains

W. J. Hatfield, of Dayton, O., for improvement in jointing table-tops.

L. O. P. Meyer, of Newtown, Conn., for vulcanizing caoutchouc compounds.

J. A. Mitchell, of Ringgold, Ga., for improvement in hand-looms.

Ephraim Parker, of Rock Island, Ill., for improvement in sawing and planing clapboards.

Godfrey Simon, of Reading, Pa., for improvement in carriages with shifting seats.

Solon Staples, of Topsham, Me., for screw for planking ships.

H. L. Sweet, of Foxborough, Mass., for guides for sewing on bindings.

Wm. H. Towers, of Philadelphia, Pa., for improvement in horse-shoe.

Elias Unger, of Dayton, Ohio, for polygonal surfaces in timber.

E. H. Bard, and H. H. Wilson, of Philadelphia, Pa., for improvement in gold pens.

Wm. Wisdom, of Cleveland, O., for cleansing hair and feathers from insects, &c.

B. F. Greenough, of Cincinnati, O., for separating alcohol from water and other heavier fluids.

B. F. Stevens and Walter Kidder, of Lowell, Mass., for shingle-machine.

A. E. Botter, of New-York, N. Y., for folding-bureau or wardrobe-bedsteads.

I. D. Garlick, of Lyons, N. Y., for self-acting machines for weighing grain.

C. F. Sibbald, of Philadelphia, Pa., for improvement in steam-boilers.

S. C. Blodgett, of Georgetown, Mass., assignor to Chas. Morey, of Boston, Mass., and Morey, assignor to Nehemiah Hunt, of Boston, Mass, for improvement in sewing-machines.

Wm. H. Atkins, assignor to W. T. Huntington, of Ithaca, N. Y., for improved time-registers, for showing the day of the week and month.

J. C. Conklin, of Peekskill, N. Y., assignor to D. Tompkins, of North Haverstraw, N. Y., and D. F. Tompkins, of New-York, N. Y., for improved pick-axes.

Wm. A. Martin, of Brooklyn, N. Y., assignor to W. Watson and Peter Van Zandt, of New-York, N. Y., for improved method of folding Seidlitz powders.

Alfred C. Cook, of Russelville, Ky., for machine for sawing bevel surfaces.

Samuel Champion and Thomas Champion, of Washington, D. C., for improvement in feathering paddle-wheels.

Isaac Crandal, of Cherry Valley, N. Y., for improvement in running-gear of wagons.

John Collman, of Silver Creek, Ill., for ruling-machine.

Wm. S. Dillehay, of the county of Shelby, Ky., for improvement in straw-cutters.

John Donlevy, of New-York, N. Y., for the method of forming plates for poly-chromatic printing.

F. P. Dimpfel, of Philadelphia, Pa., for improvement in steam-boiler furnaces.

J. Hamilton, of New-York, N. Y., for improvement in quartz crushing-machine.

M. W. Helton, of Bloomington, Ind., for improved method of hanging and operating saw gates.

G. D. Miller, of New-Berlin, Pa., for improved tyeres.

Lucius Page, of Cavendish, Vt., for improvement in screw bolts and nuts.

Jonathan Russell, of Philadelphia, Pa., for cutting irregular forms.

D. H. Chamberlain, of Boston, Mass., assignor to himself and Nehemiah Hunt, for improvement in banding pullies for saws.

J. H. Longbotham, of Brooklyn, N. Y., for improvement in bookbinder's boards.

G. A. Xander, of Hamburg, Pa., for improvement in corn-shellers.

C. Muller, of New-York, for improvement in machines in casting type.

Matthew Stewart, of Philadelphia, Pa., for floor-plates of malt-kilns.

E. A. Tuttle, of Williamsburgh, N. Y., for hot-air registers.

J. B. Terry, of Hartford, Conn., for machine for sticking pins.

Z. C. Ogden, of Glenn's Falls, N. Y., assignor to L. C. Ogden, for lowering, raising, and fastening carriage-tops.

W. H. Price, of Philadelphia, Pa., for improved bedstead-fastenings.

P. P. Tapley, of Lynn, Mass., for improved machines for polishing leather.

W. B. Tilton, of New-York, N. Y., for improvement in guitars.

C. Desbeau, of Paris, France, for improved method of turning the leaves of books.

John Shuttleworth, of Frankfort, Pa., for improvement in power-looms.

Joseph Nason, of New-York, N. Y., for improved method of cutting screws in lathes.

Reuben M. Hines, of Mentz, N. Y., assignor to Horace C. Silsby, of Seneca Falls, and Reuben M. Hines, of Mentz, N. Y., for improved hay and manure forks.

Thomas W. Harvey, of New-York, N. Y., assignor to John B. Terry, of Hartford, Conn., for improvement in machines for sticking pins.

Sherburn C. Blodget, of Philadelphia, Pa., for trimming and cording umbrella-covers.

Patrick Clark, of Rahway, N. J., for regulating the damper of steam-boilers.

R. H. Collyer, of San Francisco, Cal., for improvement in quartz-pulverizer.

T. F. Englebrecht, of New-York, N. Y., for improvement in double-acting spring-hinges.

Banford Gilbert, of Pittsburgh, Pa., for improvement in corn-shellers.

J. D. Greene, of Cambridge, Mass., for improvement in breech-loading fire-arms.

J. B. Holmes, of Cincinnati, O., for improvement in machine for nailing washboards.

Samuel Malone, of Tremont, Ill., for improvement in corn-planters.

G. F. Page, of Baltimore, Md., for improvement in ratchet catch for head-blocks in saw-mills.

Thos. Rogers, of Philadelphia, Pa., for improvement in cutting hand-rails.

H. C. Nicholson and James Spratt, of Cincinnati, for improvement in sealing preserve-cans.

Oren Stoddard, of Busti, N. Y., for machinery for sawing logs.

Wm. Wright, of Hartford, Conn., for operative cut-off valves of steam-engines.

E. L. Freeman, of Belville, N. Y., for bog-cutting cultivators.

WEEK ENDING JAN. 10.

David Clark, of Philadelphia, Pa., for oil-cup and steam-engines.

Lucian A. and J. W. Brown, of Hartford, Conn., for press for veneering.

Leonard Campbell, of Columbus, Miss., for cotton-gins.

D. S. Darling, of Brooklyn, N. Y., for improvement in preventing dust from entering railroad-cars.

D. M. Cummings, of North Enfield, N. H., for improvement in machinery for mortising frames for window-blinds.

C. W. Fillmore, of Coral, Ill., for improvement in clamps for holding steel plates, while being hardened and tempered.

B. C. Goffin, of New-York, N. Y., for improvement in attaching cross-bar fastenings to vault and safe-doors.

B. D. Gullet, of Aberdeen, Miss., for improvement in cotton-gins.

Halver Halvorson, of Hartford, Conn., for improvement in machine for pegging boots and shoes.

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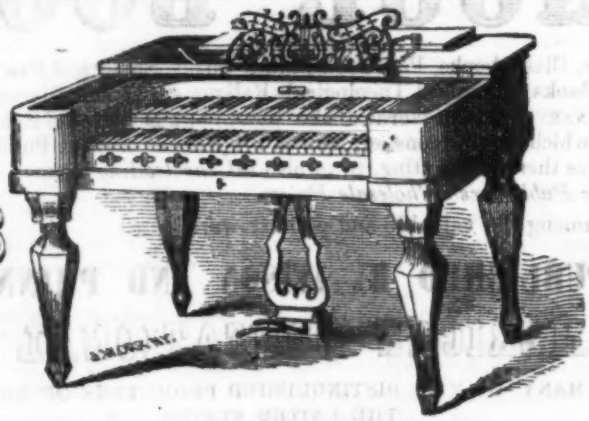

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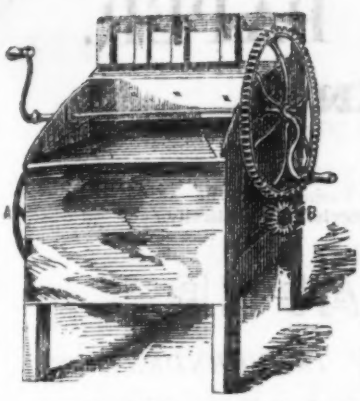

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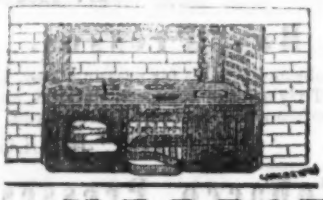

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The Work will be completed in 12 Monthly Parts, at 25 cts. each.

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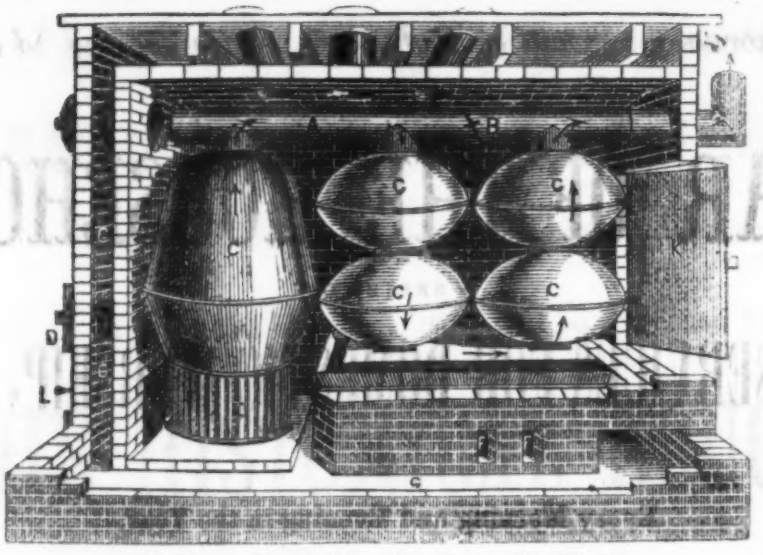
F. PARKER, 35 Washington St., Boston.

Walker's Patent



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PATENT MIRROR MANTELS,

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FALL OF 1853.

GREAT CENTRAL THROUGH LINE TO THE WEST!

☞ CARRYING THE GREAT WESTERN MAIL.

BALTIMORE AND OHIO RAILROAD,

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THE EXPRESS MAIL TRAIN leaves Baltimore at 7 P. M. daily, on arrival of the 9 A. M. Train from New York, and proceeds directly through,—or Passengers leaving New York at 5 30 P. M., and Baltimore at 8 A. M., may lodge in Cumberland, and proceed thence in the morning to *Wheeling, where they arrive at* 1 *P. M.*

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Baltimore to	do. - - -	10 00	To	do. - - - -	11 00
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Baltimore to	do. - - -	12 30	To	do. - - -	15 00
Washington to	do. - - -	13 00	To	do. - - -	16 00

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NEW YORK, to J. L. SLEMMER, *cor. Park Place and Broadway, opposite the Park and one block above the Astor House.*

PHILADELPHIA, to MR. BLACKWELL, *Library St.*, or to the TICKET SELLER at Balt. R. R. Station, *Broad & Prime Sts*

BALTIMORE, to J. T. ENGLAND, *at Baltimore and Ohio Railroad Station.*

WASHINGTON, to T. H. PARSONS, *Agent at Railroad Station.*

WASHINGTON BRANCH.

LEAVE BALTIMORE at	- - - -	4 15 A. M.	LEAVE WASHINGTON, for Balt. at	-	6 A. M.
Do.	do. - - - - -	9 A. M.	Do.	do.	do. - -	8 A. M.
Do.	do. - - - - -	3 30 P. M.	Do.	do.	do. - -	3½ P. M.
Do.	do. - - - - -	7 P. M.	Do.	do.	do. - -	5 P. M.
On Sunday at	- - - -	4 15 A. M.	*On Sunday* at	- -	6 A. M.
Do.	- - - - -	6 10 P. M.	Do.	- -	5 P. M.

The FIRST and FOURTH Trains from Baltimore, and the SECOND and FOURTH Trains from Washington, will be Express Mail Trains—stopping only at Washington Junction and Annapolis.

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FIRE-BRICK WORKS,
PERTH AMBOY, N. J.

A LARGE stock of the best No. 1 Fire Brick constantly on hand. Vessels of any draft can load at any stage of the tide and season of the year.

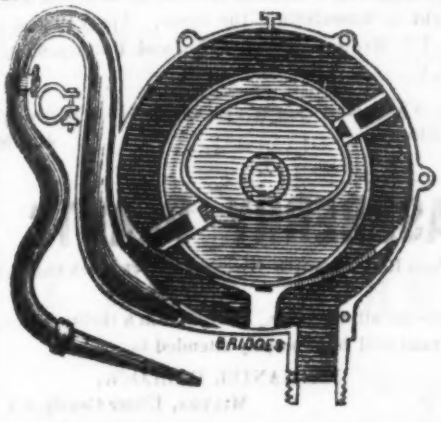
SHAPES.—Large and small Bull-Heads in walls, from 5 feet to 9 feet circle; Wedges, Split Brick, Soaps, Cupola, for any circle, from 18 inches to 30 inches, constantly on hand.

KAOLIN of the best quality.

ONE MILLION Bricks can be made at this factory in six months, and none are made from October to April. All orders for unusual shapes should be given in the Spring, as bricks are *better* and made much *cheaper* in the *summer months*. Vessels loaded with dispatch. Orders promptly executed.

Mar. 3, 1852.

A. W. CARY'S ROTARY FIRE-ENGINE PUMPS.



THE Inventor, after thoroughly testing this engine pump, for the past two years,) feels confident that it is not equalled by any thing now in market, in the way of raising or forcing water: the motion being rotary, the stream is constant, without the aid of an AIR vessel. The packing is self-adjusting, very durable, and cannot well get out of order.

These pumps are well calculated for all the purposes for which pumps or hydrants may be used, viz., Factories, Steamboats, Tanneries, Breweries, Distilleries, Railroads, Water Stations, Hotels, Mines, Garden Engines, &c.

Among the many testimonials given of this pump, is a gold medal awarded at the last great Fair of the American Institute.

No. 1 is a house or well pump and domestic Fire Engine, and will raise from 20 to 30 gallons per minute.

No. 2 will raise 100 gallons at 120 revolutions.

No. 2½	"	200	"	120	"
No. 3	"	300	"	120	"

The quantity raised can be doubled, by doubling the revolutions. These machines are manufactured and sold by the subscribers at Brockport, N. Y., also in this city, 48 Courtland street, (corner of Greenwich,) by J. C. CARY.

Sept. 18–1y. CARY & BRAINERD.

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Suites consisting of Bureau with Glass, Wash-stand, Table, Bedstead, and 4 Cane seat Chairs, are offered as low as $25. With marble tops as low as $45 the suit and upwards, with the addition of Commode and Rocker to $150 the set, price varying according to style and expense of finish. Every article warranted.

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Persons Insuring with this Company, will be entitled to their pro rata share of the first declared dividend. The rules and principles adopted have stood the test of experience, and must secure, beyond contingency, the object for which Life Insurance is effected,—immediate and permanent aid to the Widow and Orphan.

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PART I.—Elements of Music. Part II.—Progressive Finger Exercises. Part III.—Airs, Marches, Waltzes, Variations, &c. Part IV.—Favorite Movements from Operas. Part V.—Voluntaries and Interludes. Part VI.—Selections from Oratorios. Part VII—Modulations. By JOHN ZUNDEL, Organist of St. George's (Dr. Tyng's) Church, Newark, Author of "Two Hundred and Fifty Voluntaries and Interludes," "The Amateur Organist," etc.

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PATENT Parautoptic Powder Proof

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Thorough bred Short Horn and Grade Cattle, Thorough bred Alderney Cattle,
Do. Ayrshire Cattle, Do. Devons do.
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Swine and Poultry, very fine, of different breeds. Also, Fine, well-broken Devon Working Oxen.

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Feb. 54 tf.

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To Merchants, Jewellers and Bank Directors, we would only say, examine them, and the proofs, and you will be convinced of their superiority over all others manufactured.

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Our depot, where an assortment of all kinds and sizes are constantly on hand, is at 33 MAIDEN LANE,
2 doors from Nassau St., N. Y.
WM. McFARLAND & CO.

NEW YORK, Aug. 23, 1853

Messrs. McFarland & Co.:

GENTS:—It affords us pleasure to inform you that the Fire and Burglar Proof Safe we purchased of you, preserved our books and papers at the disastrous fire of the Pearl St. House, last evening, in the most perfect manner. Although it was covered throughout the fire, with burning Rosin and other oils, and directly under a broken gas pipe, in the most intense heat, it remained true to its name, and its contents, when taken out, were not even scorched, and hardly bore the smell of fire To any one in want of a superior Safe, a perfect safeguard against fire, we cheerfully recommend your manufacture, having had a personal experience of their excellence.

Yours truly,
POND & HITCHCOCK

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Baltimore, Md., No. 7 Commerce Street.
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Portland, Oregon, 37 Front Street.
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Agents.—Kendall, Richardson & Co., Bath, Me.; Henry Butler, Bangor, and T. McFarland, Richmond, Me. Jan

A SHEPHERD WANTED.

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Jan. '54, 3 mos. 283.

AMERICAN POLYTECHNIC JOURNAL,

OF THE

INDUSTRIAL ARTS,

AND BULLETIN OF THE PATENT OFFICE.

ILLUSTRATED.

This Journal, comprehending *many arts* as its name (Polytechnic) implies, has just completed its first year. In it are to be found Statistics and Essays upon some of the most important industrial interests of the country; the great staples of Cotton and Sugar have received a share of attention, and the manufactures of Iron and Wood have been duly noticed. That interesting subject of Electro-Mechanics has been fully discussed, and a digest of the entire decisions of the Supreme Court in Patent cases reported, as well as discussions upon Patent Law. The Patents of the current year have been fully reported and illustrated by engraved diagrams, forming a complete *expose* of the Patent Office for the past year.

The coming year the above subjects will receive additional attention; besides, which reports will be published upon the industry of Europe, for which purpose one of the editors has taken up his residence in Paris. We shall be able, therefore, to give the earliest accounts in all matters pertaining to the Arts and Industry of the World.

This work contains, the present year, the enormous amount of 640 illustrations; and arrangements have been made still further to increase its usefulness and add to its value.

It is believed that the American Polytechnic Journal is now second to no other work of the kind published, for reliable information and authority on mechanical points. It is afforded at the low price of THREE DOLLARS per annum to subscribers, which is cheaper than any other work of equal magnitude, of a scientific character, in the world.

An early subscription for the coming year is solicited, in order to regulate the size of the edition, and to ensure the obtaining the first numbers. Copies of the last year can be had at the publication office, No. 6 Wall Street, for three dollars, or bound in two volumes for three dollars and fifty cents. To Clubs and canvassers a liberal discount will be made. All orders should be addressed to

J. J. GREENOUGH,

Jan. 3t **No. 6 Wall St., N. Y.**

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AND

CHORAL ADVOCATE,

Is the cheapest and best Musical Paper in the world. This Journal, (which has heretofore been published monthly) commences its fifth year in January next, and thenceforward will be published every two weeks—on every other Thursday; thereby giving more than twice as much matter without any increase in price: Each number contains sixteen quarto pages, four of which are new music, consisting of Glees, Hymn Tunes, Chants, Anthems, Dedication and Holiday pieces, and, in short, every variety of music adapted to purposes of religious worship, to public occasions and to the home circle: all of which will be of a practical character and such as can be sung by persons of ordinary musical attainments: In the editorial department of the REVIEW are engaged (in addition to Mr. Cady, the former editor,) gentlemen of the highest talent and ripest musical experience, among whom are GEORGE F. ROOT, WM. B. BRADBURY, THOMAS HASTINGS, and LOWELL MASON; and its circle of correspondence, home and foreign, is complete. The REVIEW will also be a regular medium for the announcement of new musical publications by all the leading publishing houses in the Union. The subscription list of this paper is now larger than that of any similar journal in the world, and the new arrangements, rendering it the cheapest as well (it is hoped) the most valuable musical paper ever publishhd, must largely increase its already unparalleled circulation.

TERMS.—*One dollar per annum, or six copies for five dollars,* always in advance.

☞ The music alone in a volume would cost over five dollars in the usual form: Besides this, there will be an immense amount of musical news, essays, criticism, instruction, &c., &c., *all for only one dollar.* Every one feeling a particle of interest in the cause of music will surely subscribe.

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PROSPECTUS

OF

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NEW YORK, Jan. 5, 1854. Feb., 1t.

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Everything of a pernicious and trashy nature is carefully excluded; add the head of a household, after perusing it, will, on account of its high moral tone, take pleasure in introducing it into the family. We have received and published hundreds of letters from all parts of the Union, speaking in complimentary terms of the LEDGER in this respect. What the proprietor aims to do is, to publish everything in the way of Markets and Business matter that is adapted to interest the Merchant, and after that to take particular pains to make the paper entertaining and instructive to the Family. We might give columns of extracts from our exchanges, and from letters received from subscribers, to show the high estimation in which The LEDGER is held throughout the Union, but we will content ourselves with giving the following notice from a city paper, as it "speaks to the point."

MERCHANTS' LEDGER.—To our country customers we wou'd say, that this paper is one of the most reliable mercantile journals published in this country. Its tables of "prices current" are arranged and compiled with great care and accuracy, and its editorial notices and remarks on the general trade and commerce of the city, country, and nations, are always marked with great ability and foresight. The miscellaneous matter is varied, chaste and spirited, and ever has a healthy, moral bearing. Vices and abuses of every kind are handled "without gloves," and is an uncompromising battle for the right. Its typography is neat and its dress and address pleasing. Every country merchant shou'd have it on his desk, and every family a copy on their centre-table.

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*** All communications intended for the Editorial Department of the paper should be directed to the EDITORS OF THE CHURCH JOURNAL, 16 John Street; and all letters on business to PUDNEY & RUSSELL, Publishers, 16 John Street.

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☞ Any person remitting twenty dollars shall receive ten copies of the paper for one year, mailed according to his directions. Missionaries of the Church, both General and Diocesan, shall receive the Journal *free*.

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AMERICAN RAILROAD JOURNAL.

Steam Navigation, Commerce, Mining and Manufactures.

***ESTABLISHED* 1831.**

HENRY V. POOR, EDITOR.

Published at 9 Spruce Street, N. Y. at $5.00 per annum in advance.

BY JOHN H. SCHULTZ & CO.

This Journal, which has attained its twenty-second year, is now taken by nearly every Railway Company and Engineer of repute in the United States, as well as by those Manufacturers who furnish equipments for the operation of Railways, and Contractors who are permanently engaged in the construction of public works. It has also an extensive circulation among the leading capitalists of Great Britain, France and Germany, who invest in American Securities, and by the same class of people and their agents, in this country. That it was started at an early period in railway history, and has risen, entirely dependent upon its own resources, to be considered as an *authority*, upon railway matters, in this and other countries, which is looked to by capitalists for a guide in their investments in rai way securities—is the best possible evidence of the ability and disinterestedness with which it has been conducted, and the reliability which has characterized its information. It is daily receiving large accessions to its subscription list, and its advertising columns are resorted to by all inventors of improvements in railway equipments, who wish them introduced to the notice of the public in a way to command the attention of those peculiarly interested in their immediate adoption.

The American Railroad Journal

is devoted principally to the dissemination of FACTS connected with Railways generally, and their proper construction, equipment and operation; also, to the discussion of the merits of newly-proposed lines, and the management of old ones, as set forth by their reports and exhibits.

The Department of Machinery and Mechanical Engineering

is under the direction of MR. ZERAH COLBURN, the well known author of the only American work on the Locomotive, and one of the best practical mechanics in the United States.

The Law Department

Will continue under the direction of MR. FRANCIS O. DORR, whose management of it during the last year has commanded universal approval. In the

General Department of Railway and Commercial Intelligence,

MR. HENRY V. POOR, the principal Editor, will have the aid of competent and intelligent assistants to render the Journal the most reliable medium of intelligence, on all subjects of which it treats, to all who have occasion to consult its pages. It will be seen that the AMERICAN RAILROAD JOURNAL commences the year 1854 with offering more attractions than it has ever possessed heretofore. Its STOCK LIST, which is now worth the price of subscription, will be enlarged to include bonds, &c., of all the roads in the country.

All communications should be addressed to the Editor,

H. V. POOR,

9 Spruce Street, New York.

New York and New Haven Railroad.

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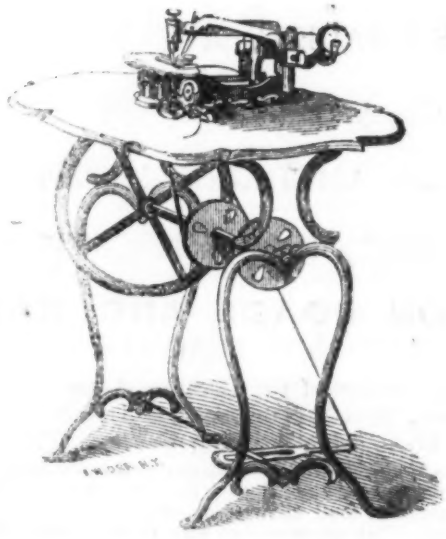

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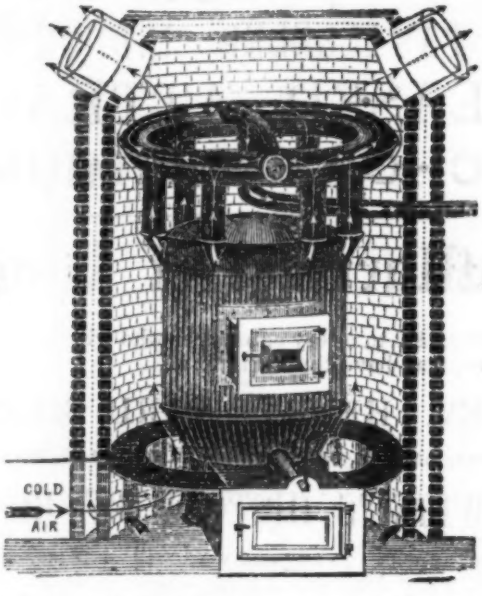

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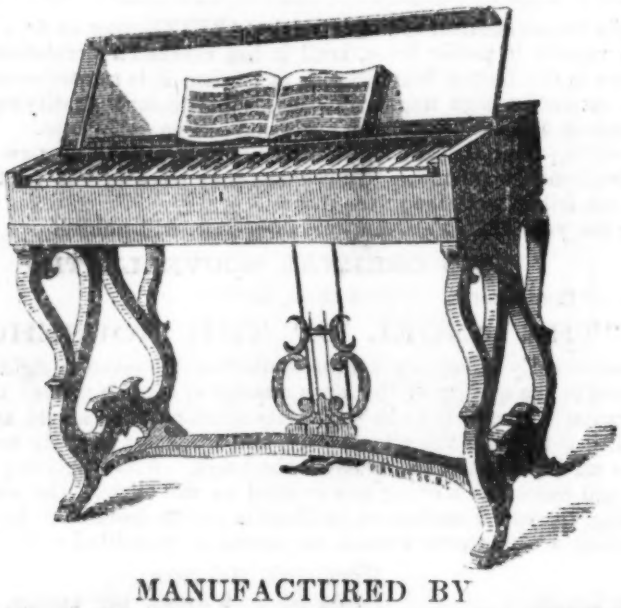

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54 Gold Street, New-York.

N. B.—L. S. & Co. have recently published, and have now for sale, the "FARMER'S GUIDE," by Henry Stephens, of Edinburgh, and Prof. Norton, of Yale College, New Haven, complete in 2 vols, royal octavo, containing 1600 pages, 14 steel and 600 wood engravings. Price, in muslin binding, $6.

☞ *This work is* NOT *the old "Book of the Farm, lately* RESUSCITATED *and thrown upon the market.*

Feb 1t.

PHALON'S PAPHIAN LOTION,

OR,

FLORAL BEAUTIFIER,

INFALLIBLE AS A PRESERVATIVE OF

The Skin and Complexion,

AND AS A MEANS OF ERADICATING OR CURING

Freckles, Tan, Pimples, Chapped Hands, Lips, and Face, Blotches, Sun Burns, Scalds, Burns, etc. and all Diseases appertaining to the Skin.

Phalon's Paphian Lotion.

The most brilliant addition to the toilet which the present age has witnessed, was the fortunate discovery of a distinguished physician and Orientalist, who obtained the knowledge of its ingredients, and the method of combining them, while traveling in India. The receipt or secret was purchased for $2,500 by EDWARD PHALON, who, in the course of a long series of experiments, has so enriched, improved, and perfected the preparation, as to insure its reception as an indispensable and unequaled article for the toilet throughout the civilized world.

To describe,

or even to enumerate, all the instances in which this peerless beautifier may be recommended as an unfailing specific, would occupy a volume; suffice it to state, that among its most important properties, is the power to improve a harsh, pallid, bronzed, mottled, or otherwise repulsive COMPLEXION, and to substitute the fascination of a delicate and dazzling white, alternating with a roseate bloom. Perhaps the blush that beautifies the inner surface of an ocean shell, will give the best idea of the rich transparent tint which it imparts to the cheeks, while no pearl can surpass the exquisite fairness which it confers upon the neck, hands, and arms.

Its Efficacy

in counteracting all injurious effects arising from exposure to the weather and change of climate, would be deemed incredible if it were not authenticated by the highest testimony. Neither the freezing blast of the north, nor the blazing heat of the south can destroy or impair the beauty of a complexion protected by the regular application of the PAPHIAN LOTION.

Fair Complexions

are always peculiarly susceptible of inflammatory influences. Over exertion in warm weather frequently produces those unpleasant and irritating eruptions known as rose-rash, nettle-rash, and prickly heat, on the face, neck, and arms of the most beautiful blonde, and if not promptly attended to, may leave a permanent blemish behind. The cooling, healing and balmy effect of the PAPHIAN LOTION is truly wonderful in cases of this kind. It does not drive in the eruption, but gives activity to the porous system, and causes the inflammatory principle or virus to exhale by insensible evaporation.

Ladies,

who, while nursing, suffer from sore or inflamed nipples, will find immediate and unfailing relief from the use of the PAPHIAN LOTION, which, from its extraordinary power to allay irritation and cool the mouth, may be truly said to render pleasing and painless, both to mother and babe, the most delightful task imposed by maternal duty. It is not, therefore, to be considered one of the mere conventional appendages of the nursery, but as an article of the first necessity in that department, and one that no wise and prudent mother will omit from her list of indispensables for her infant and herself.

Chapped Hands and Lips.

One of the most painful consequences of severe weather to ladies and children, is the chapping or cracking of the skin of the hands. It is a painful and annoying drawback to the amusements of the gay winter season, interfering with the enjoyment of many a sleigh-ride, and marring the pleasure of many a social evening by the excessive irritation which it occasions. Upon chapped, as also upon all roughness and exfoliations of the skin, occasioned by cold, the PAPHIAN LOTION acts like a charm, soothing and healing the inflamed and abraded surfaces, softening the indurated cuticle, and restoring its flexibility and transparency.

The Nursery.

To pass over in silence the peculiar adaptation of this balsamic fluid to the use of children and the purposes of the nursery, would be an act of unkindness to the mothers of our land. As a wash for infants, it cannot be too highly recommended. It promotes a healthy tone in the minute superficial vessels, so apt to become torpid in infancy; and has a soothing, cooling effect upon the tender and sensitive skin. Being not only perfectly innocuous, but eminently hygeian in its nature, it may be used by the most delicate lady, or applied to the most feeble child, with perfect confidence in its harmlessness and salutary effect. It imparts a silky texture to the young and tender skin, and protects it against detriment from external influences.

It is better,

however, to preserve intact the smoothness and beauty of the skin, than to reproduce them after they have been partially destroyed by a low temperature; and as the chapping of the hands may be effectually prevented by the use of the Lotion at the morning and evening toilet, it is desirable that ladies should thus fortify their delicate fingers in advance against the trenchant blasts of winter.

To Gentlemen

who suffer from tenderness and smarting of the face after shaving, PHALON'S PAPHIAN LOTION will prove a most welcome addition to the comforts and luxuries of the toilet; as it alleviates the irritation and pain, and renders the shaven surface soft and pliable.

LETTER FROM JAMES R. CHILTON, Chemist.

I HAVE analyzed the "Paphian Lotion" used for beautifying the complexion, manufactured by Mr. Phalon, and find it to be a harmless preparation, and not in any way injurious to the skin.

I believe it will be found serviceable for the purposes it is intended. JAMES R. CHILTON,

To EDWARD PHALON, Esq., } Chemist,
NEW YORK, *Dec. 19th*, 1853. } 87 Chambers-st

LETTER FROM MADAME ANNE THILLON.

TO EDWARD PHALON, ESQ.—*Dear Sir*:—If you think my opinion of your "Paphian Lotion" will have any weight with the public, it is, I am sure, very much at your service; I have used the preparation for some months past, and find it infinitely the most efficacious and agreeable cosmetic that has ever graced my toilet.

It unquestionably softens and improves the texture of the skin, and adds to the brilliancy and clearness of the complexion.

I can not be mistaken on these points, as by its timely application I have repeatedly removed such blemishes as are occasioned by sudden changes of the weather, to which I am particularly sensitive. It is not often that so-called "aids to beauty" advertised to the world as infallible fulfill even partially their object, but your "Lotion," so far as I am capable of judging, is really what it purports, and I cordially recommend it to all ladies who value a clear, unclouded complexion, or desire to be protected against those annoying affections of the skin consequent upon the extremes of heat and cold. I am, Sir, yours truly, ANNE THILLON.

METROPOLITAN HOTEL, *Dec. 5th*, 1853.

Manufactured and sold by EDWARD PHALON, at 197, and 517 BROADWAY (St. Nicholas Hotel). On the receipt of $1, post-paid, a bottle will be sent by Express to any part of the United States.

UNPARALLELED BARGAINS!

EXTRAORDINARY ATTRACTIONS

AT THE CELEBRATED, LARGEST, AND CHEAPEST

CARPET ESTABLISHMENT

IN THE UNITED STATES,

AT

HIRAM ANDERSON'S,

No. 99 BOWERY, N. Y.,

IMPORTER OF ENGLISH, FRENCH, AND GERMAN CARPETS.

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Above ground, no damp Basements or Vaults under the sidewalk to endanger the health of Lady purchasers; each Sales Room is devoted exclusively to one description of Carpets. The Wholesale and Retail Departments of this Establishment have been enlarged and an addition of two extensive Sales Rooms, making a wonderful and gorgeous display.

Sales Room, No. 1.

Floor Oil Cloths.—An enormous Stock of John Hare & Son's celebrated English Oil Cloths; also, American Floor Oil Cloths of magnificent satin finish, Fresco, Marble, Italian, and Scroll Paintings, from 2s. 6d., 3s., 4s., 5s., 6s., to 8s. per yard, from 3 feet to 24 feet wide and 90 long.

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Ingrain Carpets.—Two hundred and fifty pieces of English and American Ingrain Carpetings, all new style, manufactured expressly for this establishment, at unparalleled Bargains.

Sales Room, No. 3.

Three Ply Carpets.—English, Scotch, and American Imperial Three Ply Carpeting of our own Importation; gorgeous, splendid new style of pattern.

Sales Room, No. 4.

Low Price Ingrain Carpets.—Three hundred pieces of Medium quality Ingrain Carpets, beautiful large and small patterns, manufactured for the City trade, incredible low prices of 2s. 6d., 3s., 4s., 5s. per yard.

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Rugs and Druggets.—English Druggets 4 yards wide, 3,000 yards of low priced Druggets, 1 to 3 yards wide, at 3s. 6d. to 6s. per yard, also an immense assortment of Mosaic Landscape, Axminster, and Tufted Hearth Rug; also 2,000 Tufted Rugs at 16s. to 24s. each.

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Stair and Hall Carpets.—50,000 yards of striped and figured Hall and Stair Carpets at 2s., 2s. 6d., 3s., 3s. 6d., 4s., 5s., 6s., and 7s. Also, Hemp, Dutch, and Manilla Carpets for Rooms, Halls, and Stores, cheap.

Sales Room, No. 7.

Medallion Carpets, with borders; Mosaic and Axminster of one entire piece, can be fitted to any sized Room from $350 to $1,000.

Royal Velvet, Tapestry, and Brussels, from the celebrated Factories of John Crosaly & Sons, and Messrs. Henderson & Co., and others, England, all of our own Importation, some of which are exclusively our own styles, and can not be found at any other establishment.

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Aubusson Carpets.—They elicit the warmest commendations of every beholder, excel in beauty and durability, are sold at moderate prices, and introduced in the market at this Establishment.

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Patent Tapestry Ingrain Carpets.—Gold, Plain, White, Buff, and Scroll Window Shades, at 6s., 12s., 20s., 40s. to $10 per pair; Table and Piano Covers, Silver and Brass Stair Rods, Parlor Door Mats, Coir Matting; also, 4s. 6d. 5s. 6d. White and Check Canton Matting, etc., etc.

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N.B.—Buyers, Strangers, Citizens, Retail Dealers, and Merchants from abroad will find it to their advantage to examine this enormous stock, at tremendous bargains.

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